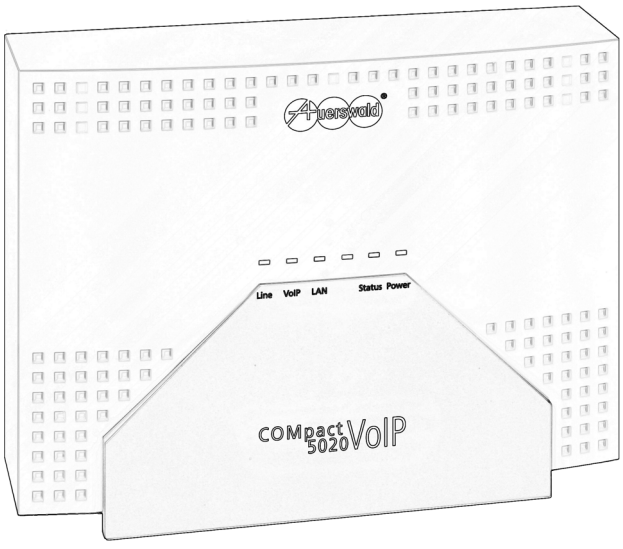
Installation and Commissioning Instructions

PBXs for analogue/ISDN and Internet telephony

COMpact 5010 VoIP
COMpact 5020 VoIP



Symbols used

This symbol warns of personal injury, for example, caused by hazardous electrical voltage.

This symbol warns of damage to property.

This symbol indicates possible application errors and conditions that, for example, could cause function limitations or malfunctions during operation.

This symbol indicates supplementary information.

This symbol indicates a visible result of an action that was just carried out, for example, a display message or a blinking LED.

This symbol indicates an audible result of an action that was just carried out, for example, the playback of an announcement.

Abbreviations used

CF	**C**all **F**orwarding
CPU	**C**entral **P**rocessing **U**nit
DDI	**D**irect **D**ialling **I**n for a Point-to-Point Connection
DSP	**D**igital **S**ignal **P**rocessor
GSM	**G**lobal **S**ystem for **M**obile communications
PD	**P**ulse **D**ialling
DTMF	**D**ual **T**one **M**ulti-frequency
MSN	**M**ultiple **S**ubscriber **N**umber
NT	**N**etwork **T**ermination device for ISDN
POTS	**P**lain **O**ld **T**elephone **S**ervice
VoIP	**V**oice **o**ver **I**nternet **P**rotocol

Information about the accompanying instructions

Additional instructions: *How to configure a PBX using the integrated web server is thoroughly described in the Configuration Manual. The Configuration Manual is located on the Auerswald Mega Disk included in the package under Manuals. How to operate a PBX is thoroughly described in the accompanying User Manual. Also note the information about the warranty, service, environment, CE symbol and declaration of conformity in the insert "Conditions of Guarantee, Information service".*

The latest information: *After functional extensions have been installed during a firmware update, you will receive current instructions on the support pages at the Auerswald web site (Internet address: www.auerswald.de).*

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Important Information

This section includes necessary information for operating the devices safely. Before installing and commissioning the PBX, be sure to read the safety information listed here. Also become familiar with the proper use of the device as well as the technical data.

Safety information

Warning: *Improper handling of the device can result in life-threatening electrical shock.*

→ *Only authorised dealers[1] may open the casing. If necessary, have an authorised dealer commission the device.*

→ *Only authorised dealers[1] may perform installation work within an open casing or service work using the buttons inside the casing. If necessary, commission an authorised dealer to perform this work.*

Warning: *Touching the voltage-carrying conductors or the telephone connections may cause a life-threatening electric shock.*

→ *Remove the power plugs for both the PBX and all peripheral equipment from the power socket before you open the casing.*

→ *If necessary, also disconnect the devices from auxiliary power sources (for example, UPS).*

→ *Only open the blue protective cover. Do not remove the tightly screwed casing cover. This prevents accidental contact which may result in a shock from hazardous voltages. Make sure that any repairs requiring the casing cover to be removed are carried out by the manufacturer. Removing or destroying the protective caps covering the screws voids the warranty.*

→ *Only mount the components (for example, expansion modules) in a voltage-free state.*

→ *Only operate the device when the casing is closed.*

→ *Only operate the device when it is mounted on the wall.*

→ *For some installation and maintenance work, it is necessary to open the PBX while it is in operation. Make sure that the PBX is never left unattended while working with an open casing.*

→ *Make sure there is always adequate insulation if you touch voltage-carrying lines.*

→ *Be sure to follow the relevant -regulations when handling 230 V system voltage and devices attached to mains.*

Warning: *Liquid penetrating the casing may cause a life-threatening electric shock.*

→ *Only operate -PBX in closed, dry rooms.*

→ *Only clean the device with a soft moist cloth or anti-static cloth.*

Warning: *Damaged connection lines as well as damage to the casing and to the PBX can cause life-threatening electrical shocks.*

→ *Only connect the device connection cable with sockets that are designed for that purpose.*

→ *Make sure that the Schuko socket for connecting the PBX is properly connected (according to VDE 0100). The power socket must be located near the PBX and be freely accessible at all times.*

→ *Replace damaged connection lines immediately.*

→ *Always have a professional carry out repairs immediately. Please contact your dealer or the manufacturer directly.*

Warning: *Power surges, which can occur during electrical storms, can cause life-threatening electric shocks*

→ *Therefore, do not mount the PBX during an electrical storm. Avoid disconnecting and connecting lines during an electrical storm.*

→ *Lay all cable inside the building – including the cable to the door terminal system.*

Attention: *Unauthorised changes to the device can damage the PBX or breach security and EMC regulations.*

→ *Always have a professional carry out repairs. Please contact your dealer or the manufacturer directly.*

Attention: *Exceeding (even temporarily) the threshold values indicated in the technical data can damage or even destroy the PBX.*

→ *Note the threshold values indicated in the technical data for voltage, electricity, performance, ambient temperature and humidity.*

Attention: *Electrostatic charges can destroy sensitive components.*

→ *Divert electrostatic charges from yourself before touching the circuit boards with your hands or any tools. To do this, touch a metal object, preferably earthed, for example, a heater or computer housing.*

Attention: *Power surges, which can occur during electrical storms, may damage or destroy the PBX.*

→ *Protect the devices by installing overvoltage protection.*

→ *Lay all cable inside the building – including the cable to the door terminal system.*

[1] These are persons that are trained for this purpose (e.g. certified electricians). They must be properly trained for working in an area with potentially hazardous voltage. Authorised dealers are made aware of the dangers they are exposed to when carrying out this type of work, and are able to reduce the risk to themselves and others as much possible.

Important Information

Attention: *Liquids penetrating the casing can damage or destroy the PBX.*

→ *Only operate -PBX in closed, dry rooms.*

→ *Only clean the device with a soft moist cloth or anti-static cloth.*

Important: *Mechanical loads and electro-magnetic fields can impair PBX operation.*

→ *Avoid mechanical loads (for example, vibrations).*

→ *Avoid proximity to devices that generate electro-magnetic fields or react sensitively to them (for example, radio receivers, amateur radio sets, mobile phones, DECT systems, or similar).*

→ *Do not expose the device to direct sunlight or condensation.*

→ *Protect the device from an extreme amount of dust.*

→ *Note the values for ambient temperature and humidity indicated in the technical specifications.*

Important: *A power failure, damaged connection lines/cable sockets or short-circuits in other devices in the building systems can put the PBX out of operation.*

→ *Using an ISDN Autoswitch (Auerswald optional accessory), you can switch a single emergency telephone from an internal to an external S_0 port during a power failure.*

→ *If you have an uninterruptible power supply, for example, the UPS-5115 Telecom (Auerswald optional accessory), you can continue operating a large part of the system during a power failure.*

→ *If at all possible, be sure to provide a separate electric circuit for the 230 V connection supplying the PBX.*

Proper use

Important: *Auerswald products are not designed, manufactured, or intended for use or resale in environments requiring fail-safe performance, such as in the operation of life-support systems and/or nuclear facilities. Use or sale of our products for these purposes is only allowed with prior written permission by Auerswald for each individual incident.*

Important: *Improper use may cause, e.g. functional restrictions or interference, the destruction of the device or, in a worst case scenario, personal injury.*

→ *If you are still not sure of the intended use of the product after reading the following section, please contact your vendor.*

General information

The COMpact 5010 VoIP and COMpact 5020 VoIP devices are telecommunication systems; they will be referred to as PBXs in the following. These PBXs connect various internal devices with various public telecommunication networks, thereby enabling external and internal calls. For this purpose, the PBX provides a number of different ports/interfaces.

PBXs are suitable not only for use in the private sector but also for use in the commercial sector (small companies or small hotels).

PBXs have numerous features, including performing the following tasks:

- Call Distribution
- Ensuring reachability
- Charge and call data evaluation
- Cost control
- Group and team administration
- Transfers
- Call protection

Important: *Many features are not available until they are set up via the PBX configuration manager.*

Important: *In order to use of some of the features, it is necessary to contact the network provider about activating the feature.*

External S_0 port

An external S_0 port is designed for connecting an NT to the European protocol DSS1 (Euro ISDN). It supports the following connection types:

- Basis access as a PBX- connection
- Basis access as a Point-to-Multipoint connection

Note: On the NT with PBX connection, only one ISDN device may be operated, in this case, only the PBX.- All other ISDN devices are operated as internal subscribers of the PBX.

Note: On the NT with a Point-to-Multipoint connection, other ISDN devices may be operated in addition to the PBX.- If the NT is equipped with a 230 V power cable and in addition to the PBX-, passive devices are connected to the NT, the NT must be connected with a 230-V power socket.

Furthermore, it is possible to connect to a digital GSM gateway.

External analogue port

The external analogue port (not a part of the basic assembly) is tested in compliance with the former TBR21 standard and therefore suitable for connecting public analogue telephone networks across Europe. The country in which the PBX is operated over an analogue connection must be configured after the device has been put into operation. Germany is the original factory setting.

Furthermore, it is possible to connect to an analogue GSM gateway.

Ethernet port

The devices are to be connected to the Ethernet port, depending on their intended use.

For Internet telephony (VoIP), the Ethernet port can be connected over a DSL router on a DSL connection. The following number of VoIP accounts can be managed by the PBX simultaneously:

- 10 (COMpact 5010 VoIP)
- 20 (COMpact 5020 VoIP)

For configuration/administration purposes, the Ethernet port can either be connected to a single computer or to multiple computers in a local network (LAN).

For a CTI solution (LAN-TAPI), the Ethernet port can be connected to multiple computers on a local network (CTI server and CTI clients). This requires CTI software. We recommend the following software manufacturers:

- OSITRON
- Estos

Note: The scope of delivery of the PBX includes an OSITRON CTI for up to three subscribers; this can be enabled by registering with OSITRON (www.OSITRON.de).

The following telephones connected to the PBX are supported by the LAN-TAPI:

- COMfortel 1500/2500 system telephone (as of firmware version 3.2D)
- COMfort 1000/1200/2000 plus system telephone (as of firmware version 2.3B)
- Analogue telephone
- ISDN telephone

Internal S_0 port

An internal S_0 port has similar requirements, such as an ISDN connection with the Point-to-Multipoint connection type and is suitable for connecting to the following terminal devices:

- COMfortel 1500/2500 system telephone (as of firmware version 3.2D)
- COMfortel DECT system telephone
- COMfort 1000/1200/2000 plus system telephone (as of firmware version 2.3B)
- ISDN telephone in compliance with the Euro ISDN Standard (DSS1)
- ISDN PC controller in compliance with the Euro ISDN Standard (DSS1)

***Important:** The power consumption of the terminal devices on an S_0 port may total a maximum of 4 W. The power consumption of all of the terminal devices on all of the S_0/U_{P0} ports together may total a maximum of 24 W.*

Internal U_{P0} port

An internal U_{P0} port is a 2-core interface that, for example, becomes useful if existing 2-core lines in an analogue installation should be used. It is suitable for connecting one of the following terminal devices:

- COMfortel 1500/2500 system telephone (as of firmware version 3.2D)

All other devices can only be connected to the U_{P0} port using a $_{U}P0/S_0$ adapter. It performs a conversion from 2 to 4-core and therefore provides an S_0 port with two Western sockets. It is suitable for connecting the following terminal devices:

- COMfortel 1500/2500 system telephone (as of firmware version 3.2D)
- COMfortel DECT system telephone
- COMfort 1000/1200/2000 plus system telephone (as of firmware version 2.3B)
- ISDN telephone in compliance with the Euro ISDN Standard (DSS1)
- ISDN PC controller in compliance with the Euro ISDN Standard (DSS1)

Note: For more than two terminal devices or a greater distance between the terminal devices from each other, we recommend switching the port to the internal S_0 port.

***Important:** The power consumption of the terminal devices on a U_{P0} port may total a maximum of 4 W. The power consumption of all of the terminal devices on all of the S_0/U_{P0} ports together may total a maximum of 24 W.*

Internal analogue port

An internal analogue port is suitable for connecting one of the following terminal devices:

- Analogue telephone with dual-tone multi-frequency
- Analogue telephone with pulse dialling
- Analogue fax machine
- Analogue answering machine
- Modem
- a/b door terminal system

***Important:** Devices using pulse dialling cannot use the full range of features.*

***Important:** Devices using dual-tone multi-frequency dialling must be equipped with a flash button.*

Note: When using a T-Net-capable analogue telephone, most T-Net functions can be used via the existing function keys on the telephone.

Switching relay

A switching relay (not a part of the basic assembly basic design) is suitable for connecting or controlling the following devices:

- Door terminal system according to FTZ 123 D12-0 (for example, TFS-Dialog 100, TFS-Dialog or TFS-Dialog pro from Auerswald)
- Door opener
- Various devices to be switched (for example, alarm sirens)

Important: *The module supplies no switching voltage to the relay contacts, meaning the devices to be switched must be supplied with external voltage.*

Attention: *The relay contacts can handle a maximum load of 30 VAC/1 A (therefore, not suitable for a direct connection to 230 V system voltage).*

→ *For switching devices operated on voltage, you therefore need an additional load-switching relay that is compatible with the safety regulations.*

Ringer/alarm input

A ringer/alarm input (not a part of the basic assembly) is suitable for connecting or controlling the following devices:

- Door bell button
- Output devices for announcement, alarm and monitoring signals (for example, leak warning device)

Music input/audio output

A music input/audio output (not a part of the basic assembly) is suitable for connecting or controlling the following devices:

- Loudspeaker unit
- Active loudspeaker
- Music output devices (for example, MP3 or CD players)

Basic assembly

The basic assembly on both PBXs includes the following connection options:

- 1 port, switchable between S_0external, S_0internal and U_{P0} internal
- 1 port, switchable between S_0external, U_{P0} internal
- 6 (COMpact 5010 VoIP) or 10 (COMpact 5020 VoIP) internal analogue ports
- 1 Ethernet interface for administration and Internet telephony over two external VoIP channels (SIP-compliant according to RFC 3261, VoIP Codec G.711 µ-Law/a-Law)
- 1 USB host for printer

Extensions

Both PBXs have a module slot for the following module

- COMpact 2VoIP module – use this to extend the PBX with two external VoIP channels as well as with the VoIP Codecs G.723.1, G.726, G.729A/E and iLBC.

The COMpact 5010 VoIP has a variable module slot and the COMpact 5020 VoIP has three variable module slots for the following modules:

- COMpact POTS module – for extending the PBX with an external analogue port.
- COMpact 2POTS module – for extending the PBX with two external analogue ports.
- COMpact TSM module – for extending the PBX with three switching relays, two ringer/alarm inputs and a music input/audio output.
- COMpact 2ISDN module (only for the COMpact 5020 VoIP) – for extending the PBX with two port, separately switchable between S_0 external, S_0 internal and U_{P0} internal.

Note: Even after adding multiple modules, the COMpact 5020 VoIP may be operated with a maximum of six external analogue and ISDN channels (one S_0 port corresponds to two ISDN channels).

By activating your PBX in a Upgrade Centre, you can extend the PBX with the following functions:

- Hotel function (only for the COMpact 5020 VoIP)
- Automatic reception
- Project numbers
- X.31 on an internal S_0 port

In addition, the following features, which are already partially enabled, can be extended:

- Subscriber numbers (number from 32 to 64)
- LCR (number of subscribers from 8 to 64)
- LAN-TAPI (number of subscribers from 4 to 20)
- Call data recording (number of data sets from 2000 to 6000)
- Call Through (number of available lines from 1 to all)

Note: The system dongle required for the extension is a component part of the basic unit.

Installation

The PBXs are intended to be operated in closed rooms. In addition, all of the devices connected to the system must be located in the building.

The PBXs enable you to connect some devices directly, inasmuch as they are close enough to the PBX. The distance depends on the length of the equipment connection cables up to a maximum of 10 m.

If no suitable connection sockets are available or are too far away, you must lay the installation cable permanently.

Warning: *Power surges, which can occur during electrical storms, can cause life-threatening electric shocks*

→ *Lay all the cable inside the building – including the cable to the door terminal system.*

Note: Accessories and service parts can be bought in specialised stores or in the Internet shop distriCOM at http://www.districom-online.de. (Delivery is provided only in Germany.)

Configuration/administration

The configuration manager on the PBX is contained in the integrated web server and can be opened with a browser. This prevents the need to install special programmes on the computer. You need only an IP-supported operating system and a compatible browser.

The configuration manager enables you to do the following tasks:

- Configure the PBX
- Manage call data
- Manage telephone book entries
- Manage wake-up times
- Manage call allowance accounts
- Manage internal hold music/announcements
- Manage data for Least Cost Routing
- Service and maintenance

In order to limit the tasks the operator or user must perform, the configuration manager is divided according to three authorisation levels:

- Admin
- Sub-Admin
- User

Important: *Make sure to take suitable measures for protecting your data and yourself from misuse.*

→ *Prevent unauthorised access to the PBX and its programming.*

→ *It is important to consistently use all of the available options for assigning passwords.*

→ *Make use of the permissions available (programming authorisation, exchange line authorisations, restricted numbers, etc.).*

→ *Additional information about protecting the system from misuse can be found at the German Federal Office for Information Security: "Secure use of digital telecommunication systems" in German) on the Internet at http://www.bsi.de/literat/tkanlage/6001.htm.*

Technical data

Power supply

Rated voltage	230 V~ ± 10%, 50 Hz
Rated current	COMpact 5010 VoIP: max. 0.4 A COMpact 5020 VoIP: max. 0.4 A
Protection class	I
Power	COMpact 5010 VoIP: max. 38 W, type 7 W (incl. one COMfortel 2500) COMpact 5020 VoIP: max. 48 W, type 7 W (incl. one COMfortel 2500)
Modules	Power supply from the PBX

Environmental requirements

Operation	+0° ... +40° Celsius, avoid direct sunlight!
Operating the modules	Installed in the PBX casing
Storage and shipping	-20° ... +70° Celsius
Humidity	10-90%, non-condensing

Connection options on the basic unit

Analogue internal	COMpact 5010 VoIP: 6 internal analogue ports; COMpact 5020 VoIP: 10 internal analogue ports
ISDN internal/external	1 S_0/U_{P0} port, optionally as internal S_0 port, internal U_{P0} port or external S_0 port, switchable (jumper); 1 S_0/U_{P0} port internal, optional as S_0 or U_{P0} port, switchable (jumper)
VoIP internal/external	1 Ethernet interface for Internet telephony (VoIP)
PC/printer	1 Ethernet interface for PC connection; 1 USB host for printer

Connection options on the COMpact POTS module

Analogue external	1

Connection options on the COMpact 2POTS module

Analogue external	2

Connection options on the COMpact 2ISDN module

ISDN internal/external	2 S_0/U_{P0} ports, optionally as internal S_0 port, internal U_{P0} port or external S_0 port, switchable (jumper)

Connection options on the COMpact TSM module

Door station	1 power supply outlet 1 door terminal input/output 2 relay outputs 2 ringer inputs; one of which is used when connecting an alarm/announcement contact
External devices to switch	3 relay outputs; two of which are used when connecting a door station

Alarm/announcement contact	1 alarm input
Loud speaker/ Playback device	1 audio output/music input

Internal analogue port

Connection unit	Terminal clamp (2-core), for three port or TAE jacks
Type of dialling	Pulse or tone dialling
Open-circuit voltage	Max. 40 VDC
Contact current	Approx. 21 mA
Range	2 x 50 Ω, approx. 800 m with 0.6 mm Ø
Ring tone	Approx. 45 V_{eff}, configurable: 25/50 Hz
Audible signals	425 Hz ± 5%, interval ± 10%
Charge pulse	Configurable: 12/16 KHz
Impedances a/b	Depending on the country variant Z_R (220 Ω + 820 Ω / 115 nF) or 600 Ω; symmetrical

Internal S_0- port

Connection unit	Terminal clamp (4-core), on the basic unit, Western/RJ-45 socket (optional)
Connection type	s_0 basis access as Point-to-Multipoint connection, EURO-ISDN (DSS1)
Supply voltage	40 V + 5% / – 15%
Feeder	Max. 4 W
Devices	Max. 2 devices recommended (max. 8 ISDN devices, of which 2 max. devices are without in-house feed, for example, various ISDN telephones)
Range	Max. 100-200 m (when laying bus lines; for IAE connection technology, the European standards ENV 41001 [DINV 41001] and EN 28877 apply)
Terminators	Switchable; Factory setting: on

Internal U_{P0} port

Connection unit	Terminal clamp (2-core), on the basic unit, Western/RJ-45 socket (optional)
Connection types	U_{P0} with the Euro-ISDN protocol (DSS1); 2 B-channels per port, direct connection to a U_{P0} telephone or to the U_{P0}/S_0 adapter
Range	Screened cable: up to 600 m; unscreened cable: up to 1000 m
Supply voltage	40 V + 5% / – 15%
Feeder	Max. 4 W

External analogue port

Connection unit	RJ-11 socket
Type of dialling	DTMF
Reception amplification	configurable: 0 to +12 dB
Transmission amplification	Configurable: 0 to +12 dB
Ringer signal frequency	Configurable: 16/25/50 Hz
CLIP detection	Configurable: V.23 FSK/DTMF
End of Call detection	Configurable: DTMF code “D” Polarity reversal of the line Loop current detection
Impedances a/b	Configurable: 600 Ohm 900 Ohm 270/275 Ohm + 750/780 Ohm || 150nF 220 Ohm + 820 Ohm||115/120nF 370 Ohm + 620 Ohm||310nF 320 Ohm + 1050 Ohm||230nF 370 Ohm + 820 Ohm||110nF 275 Ohm + 780 Ohm||115nF 120 Ohm + 820 Ohm||110nF 350 Ohm + 1000 Ohm||210nF 200 Ohm + 680 Ohm||100nF 600 Ohm + 2.16uF 900 Ohm + 1.0uF 900 Ohm + 2.16uF 600 Ohm + 1.0uF Global complex impedance

External S_0 port

Connection unit	Terminal clamp (4-core), optional Western socket
Connection type	S_0 basis access as Point-to-Multipoint connection or as a PBX connection, EURO-ISDN (DSS1), unit is powered locally

Ethernet interface for Internet telephony (VoIP) and PC connection

Connection unit	Western socket
Interface	10/100 Base-T (10/100 Mbit/s, RJ-45 twisted-pair), Full/semi-duplex autonegation, Auto-MDIX

USB host for printer

Connection unit	USB A-socket
Port	USB (Full Speed, V 1.1 or V 2.0)

Power supply outlet

Connection unit	Terminal clamp (2-core)
Output voltage	12 VDC, 100 mA

Door terminal input/output

Connection unit	Terminal clamp (2-core)
Interface	FTZ 123 D12-0

Relay outputs

Connection unit	Terminal clamp (2 x 2-core and 1 x 3-core)
Type of contact	Potential-free, 2 operating current contacts (NC), 1 operating and quiescent current contact (NC and NO)
Contact load capacity	max. 30 V/1 A

Ringer/alarm inputs

Connection unit	Terminal clamp (2 x 2-core)
Input voltage	Configurable: 0 V or 5-15 VAC/DC via the door bell button (NC)
Active state	Contact is closed for more than 0.5 s.

audio output/music input

Connection unit	Cinch connector
Output level	Max. 1 V_{eff}
Input level	Adjustable from -18 to +10 dB (1 V_{eff})
Internal resistance	1 kΩ

Miscellaneous

Cabinet	Plastic, chassis with lid and protective cover
Dimensions (W x H x D)	Basic unit: 301 mm x 243 mm x 86.5 mm COMpact 2VoIP module: 37 x 43 x 3 mm COMpact POTS module: 92 x 60 x 17 mm COMpact 2POTS module: 92 x 60 x 17 mm COMpact 2ISDN module: 92 x 60 x 16 mm COMpact TSM module: 92 x 60 x 16 mm
Weight	Basic unit: approx. 1500 g COMpact 2VoIP module: approx. 6 g COMpact POTS module: approx. 50 g COMpact 2POTS module: approx. 50 g COMpact 2ISDN module: approx. 50 g COMpact TSM module: approx. 50 g
Safety	CE, EN 60950

Recommended number of system telephones for a complete system

PBX	COMfortel 1500	COMfortel 2500	COMfort 1000	COMfort 1200	COMfort 2000 plus	COMfortel DECT 900 Base	COMfortel DECT 900 Handset
COMpact 5010 VoIP	4	4	4	4	4	2	6
COMpact 5020 VoIP	12	12 (16)	16	16	16	4	12

Power consumption of the various terminal devices

Power	Terminal device	
Max. 2 W	COMfortel 1500/2500 system telephones	
Max. 1 W	COMfort 1000 and COMfortel DECT 900 Base system telephones, ISDN telephones	
0 W	Devices with separate power supply	COMfort 1200/2000 plus system telephones as well as COMfortel 2500 with optional power supply plug COMfortel XT-PS
	Devices that draw power from another device, for example, a computer	ISDN PC controllers

Preparation

This section describes the preparations required before installing and commissioning the device. In addition, how to open the casing, and how to attach it to the wall, as well as how to install modules on the PBX (not included in the delivery). In addition, this section describes how to select specific operation modes on the switchable ports, and how to enable and disable the terminators. The tables over the terminal area as well as over the modules shouldfacilitate locating the various connection options. Planning the system configuration in advance should prevent needing to make changes later.

Planning the system configuration

Steps to take

1. Put some thought into what kind of terminal devices and how many of them you would like to connect to the system. Do the devices correspond to the intended use of the PBX?
2. Think about how many external call channels you need for smooth telephone operation.
3. Determine the number of internal and external ports you need. Do the existing ports suffice or do additional modules need to be installed?
4. Locate a suitable location to mount the PBX. This should preferably be placed in the immediate vicinity of the wall sockets of the network provider.

Opening the casing

Warning: *Improper handling of the device can result in life-threatening electrical shock.*

→ *Only authorised dealers[2] may open the casing. If necessary, have an authorised dealer commission the device.*

Warning: *Touching the voltage-carrying conductors or the telephone connections may cause a life-threatening electric shock.*

→ *Remove the power plugs for both the PBX and all peripheral equipment from the power socket before you open the casing.*

→ *If necessary, also disconnect the devices from auxiliary power sources (for example, UPS).*

Warning: *Power surges, which can occur during electrical storms, can cause life-threatening electric shocks*

→ *Do not open the PBX during an electrical storm.*

Steps to take

1. Insert your index finger into the opening on the cover. See Abb. 1.
2. Unlatch the lock by pulling the protective cover towards yourself. See Abb. 1.
3. Lift the protective cover upwards and remove it entirely from the terminal area. See Abb. 1.

Important: *Only open the blue protective cover. Do not remove the tightly screwed casing cover. This prevents accidental contact which may result in a shock from hazardous voltages. Make sure that any repairs requiring the casing cover to be removed are carried out by the manufacturer. Removing or destroying the protective caps covering the screws (Abb. 2) voids the warranty.*

Abb. 1: Opening the casing

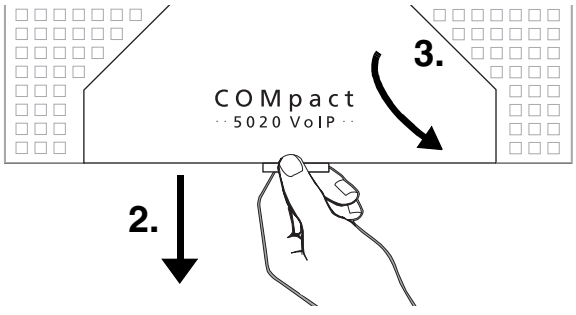
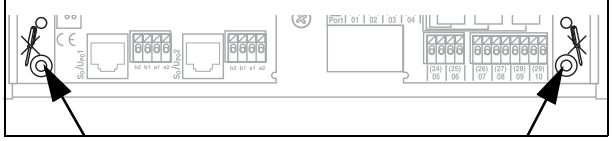


Abb. 2: Do not remove the protective caps



[2] These are persons that are trained for this purpose (e.g. certified electricians). They must be properly trained for working in an area with potentially hazardous voltage. Authorised dealers are made aware of the dangers they are exposed to when carrying out this type of work, and are able to reduce the risk to themselves and others as much possible.

Overview of terminal area

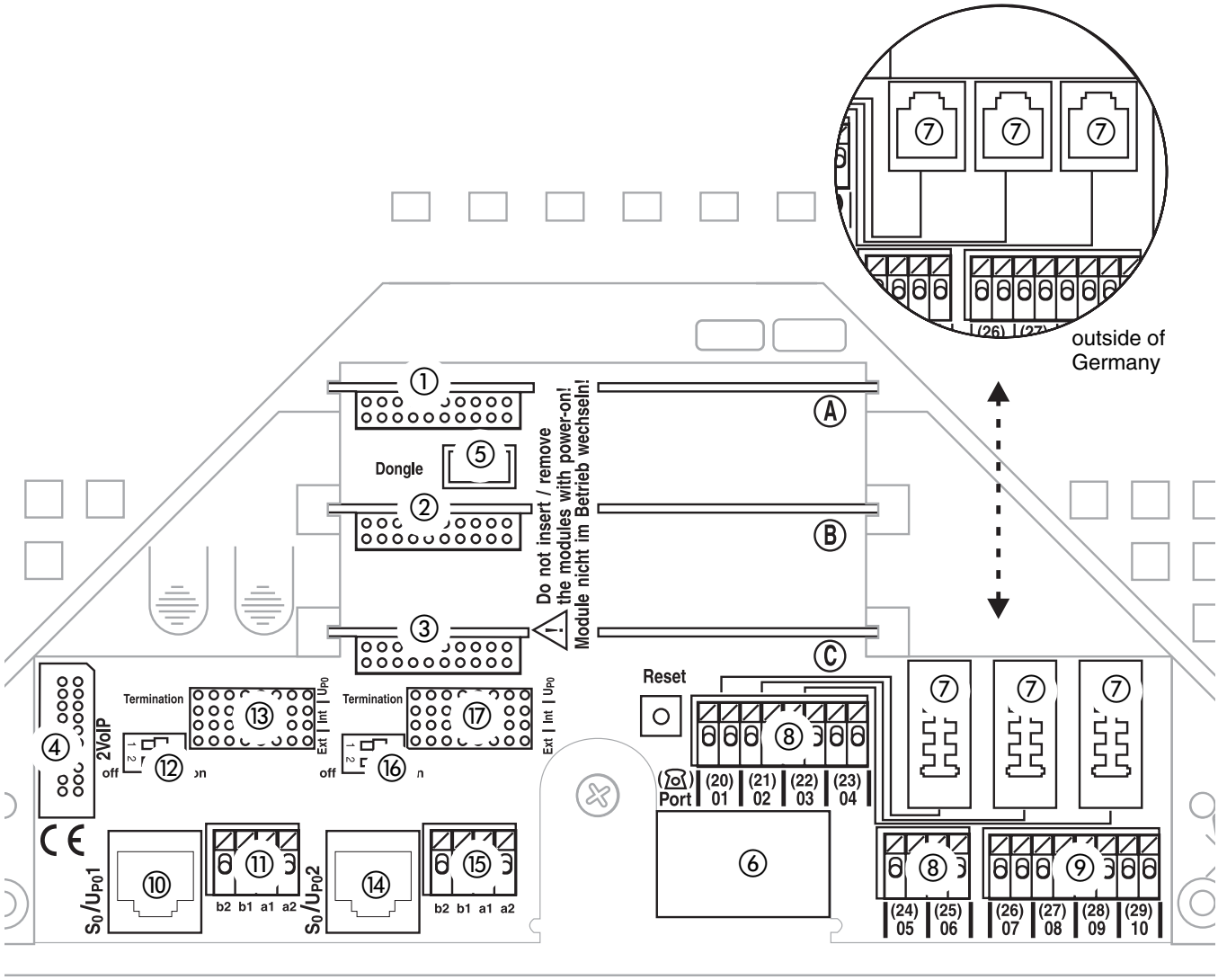


Abb. 3: Base circuit board, COMpact 5010/5020 VoIP

① Variable module slot A

② Only for the COMpact 5020 VoIP: variable module slot B

③ Only for the COMpact 5020 VoIP: variable module slot C

④ Module slot V

⑤ Expansion slot for the system dongle

⑥ Groove for input leads

⑦ TAE jacks or Western sockets (depending on the country variant) for connecting analogue terminal devices to the internal a/b ports 01-03

⑧ Terminal clamps for connecting analogue terminal devices to the internal a/b ports 01-06

⑨ Only for the COMpact 5020 VoIP: erminal clamps for connecting analogue terminal devices to the internal a/b ports 07-10

⑩ Western socket for connecting to the S_0/U_{P0} port 1

⑪ Terminal clamps for connecting to the S_0/U_{P0} port 1

⑫ DIP switches for terminators on the S_0/U_{P0} port 1

⑬ Jumper for switching the operation mode on the S_0/U_{P0} port 1

⑭ Western socket for connecting to the S_{45}/U_{P0} port 2

⑮ Terminal clamps for connecting to the S_0/U_{P0} port 2

⑯ DIP switches for terminators on the S_0/U_{P0} port 2

⑰ Jumper for switching the operation mode on the S_0/U_{P0} port 2

Overview of the COMpact 2ISDN module

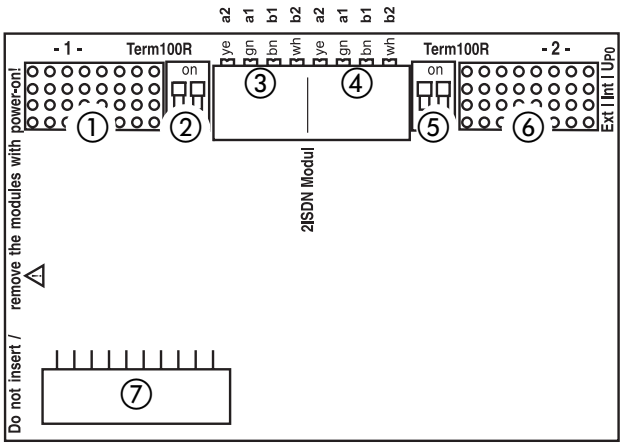


Abb. 4: COMpact 2ISDN module

① Jumper for switching the operation mode on the S_0/U_{P0} port 1

② DIP switches for terminators on the S_0/U_{P0} port 1

③ Terminal clamps for connecting to the S_0/U_{P0} port 1

④ Terminal clamps for connecting to the S_0/U_{P0} port 2

⑤ DIP switches for terminators on the S_0/U_{P0} port 2

⑥ Jumper for switching the operation mode on the S_0/U_{P0} port 2

⑦ Connector for insertion on the base circuit board (expansion slot A-C)

Overview of the COMpact 2POTS/POTS module

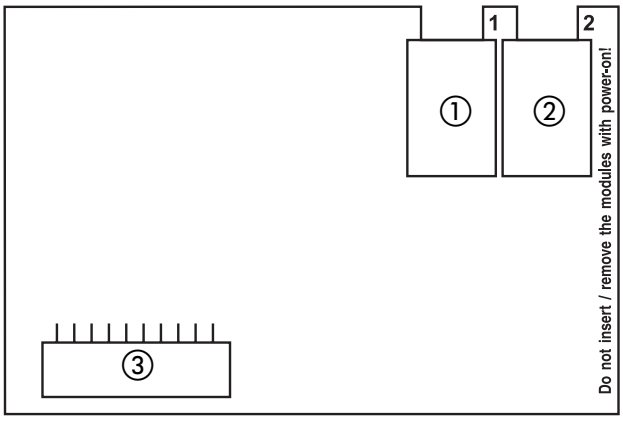


Abb. 5: COMpact 2POTS/POTS module

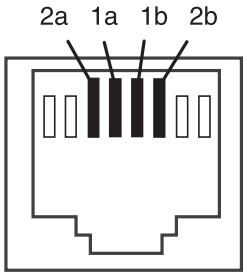
① Western socket for connecting to the external analogue port 1

② Only for the COMpact 2POTS module: Western socket for connecting to the external analogue port 2

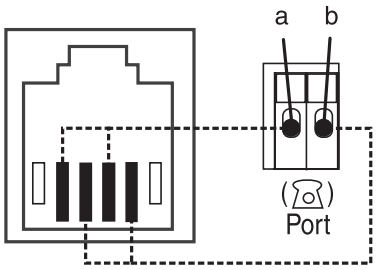
③ Connector for insertion on the base circuit board (expansion slot A-C)

Western socket assignment

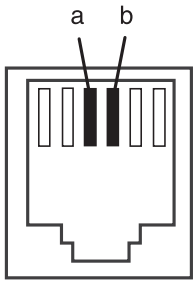
ISDN Western sockets



Internal analogue Western sockets (only outside of Germany)



External analogue Western sockets (POTS)



Mounting the device on the wall

Requirements

✔ Hand tools and material:
- Drill and screw driver
- The accompanying drilling template
- The accompanying screws and dowels

✔ The existing connections in the immediate vicinity of the mounting location:
- A freely accessible 230 V Schuko socket
- Wall socket/NT of the network provider; for great distances, hard wiring between the devices is necessary.

Warning: *Liquid entering the casing can cause life-threatening electric shocks or damage/destroy the PBX.*

→ *Only operate the device in closed, dry rooms.*

Attention: *Overheating can damage or destroy the system.*

→ *Note the ambient temperature values indicated in the technical specifications.*

→ *Make sure that heat produced by the device can be adequately vented into the environment. Do not install the system in a cabinet without adequate air circulation.*

Important: *Mechanical loads and electro-magnetic fields can impair PBX operation.*

→ *Avoid mechanical loads (for example, vibrations).*

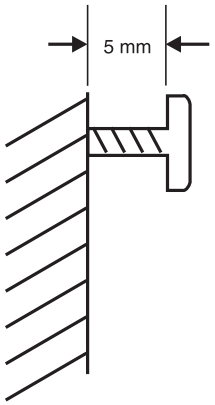
→ *Avoid proximity to devices that generate electro-magnetic fields or react sensitively to them (for example, radio receivers, amateur radio sets, mobile phones, DECT systems, or similar).*

→ *Protect the device from soiling, dust and condensation.*

Steps to take

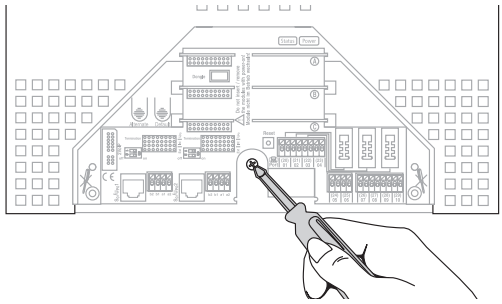
1. Hold the drilling template on the area where the device is to be mounted and place marks where the mounting holes are to be drilled into the wall.
2. Drill the mounting holes (∅ 6 mm) and insert dowels into the holes.
3. Screw in the two screws far enough that the screw head is about 5 mm away from the wall. See Abb. 6.

Abb. 6: Distance of the screws from the wall



4. Mount the PBX on the screws, then tighten the screws into the wall downwards until the stopper.
5. Fasten the PBX using the third screw. See Abb. 7.

Abb. 7: Tighten the casing



Changing the operating mode for the switchable ports

Attention: *Electrostatic charges can destroy sensitive components.*

→ *Divert electrostatic charges from yourself before touching the circuit boards with your hands or any tools. To do this, touch a metal object, preferably earthed, for example, a heater or computer housing.*

Requirements

✔ Previous system planning

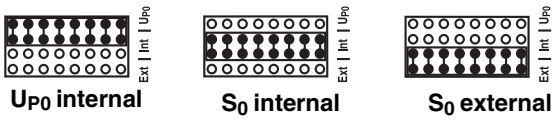
Note: Even after adding multiple modules, the COMpact 5020 VoIP may be operated with a maximum of six external analogue and ISDN channels (one S_0 port corresponds to two ISDN channels).

Note: Port 1 on the base circuit board only supports the operating modes S_0 internal and U_{P0} internal.

Steps to take

1. Remove the jumper for the port to be switched.
2. Reinsert the jumper according to the desired operating mode. The correct jumper setting can be found on the circuit board label or the Abb. 8.

Abb. 8: Jumper setting



Switch terminators

Attention: *Electrostatic charges can destroy sensitive components.*

→ *Divert electrostatic charges from yourself before touching the circuit boards with your hands or any tools. To do this, touch a metal object, preferably earthed, for example, a heater or computer housing.*

Requirements

✔ Previous system planning

✔ The following is a list of uses for the port in question (for enabling the terminators):

- The PBX port in question is located at the beginning/end of a series of devices, for example, when laying an internal S_0 bus in one direction.
- The PBX port in question is only connected to one device, for example, in a direct connection to an NT with a PBX connection.

✔ The following is a list of uses for the port in question (for disabling the terminators):

- The PBX port in question is located in the middle of a series of devices, for example, when laying an internal S_0 bus in two directions.
- The PBX port in question is connected to an existing socket, for example, to an NT with an external S_0 bus with terminators in the last socket.

Steps to take

1. Enabling: Push both buttons on the DIP switch to be switched to the “on” position. See Abb. 9.

   Disabling: Push both buttons on the DIP switch to be switched to the “off” position. See Abb. 9.

Abb. 9: Switch setting

Enabled **Disabled**

Updating/upgrading the PBX

Warning: *Touching the voltage carrying conductors or the telephone connections – including those on the modules – may cause a life-threatening electric shock.*

→ *Ten seconds before inserting or removing modules, remove the PBX power plug and the accessory power plug from the power socket.*

Attention: *Electrostatic charges can destroy sensitive components.*

→ *Divert electrostatic charges from yourself before touching the circuit boards with your hands or any tools. To do this, touch a metal object, preferably earthed, for example, a heater or computer housing.*

Requirements

✔ Previous system planning

Note: Even after adding multiple modules, the COMpact 5020 VoIP may be operated with a maximum of six external analogue and ISDN channels (one S_0 port corresponds to two ISDN channels).

Note: For multiple modules, first carry out the necessary settings and installations before you insert the module.

Steps to take

1. Insert the module between the two circuit board guides. See Abb. 10 on page 17.

Note: There is no circuit board guide for the COMpact 2VoIP module expansion slot.

2. Press the module downwards and vertically towards the base circuit board.

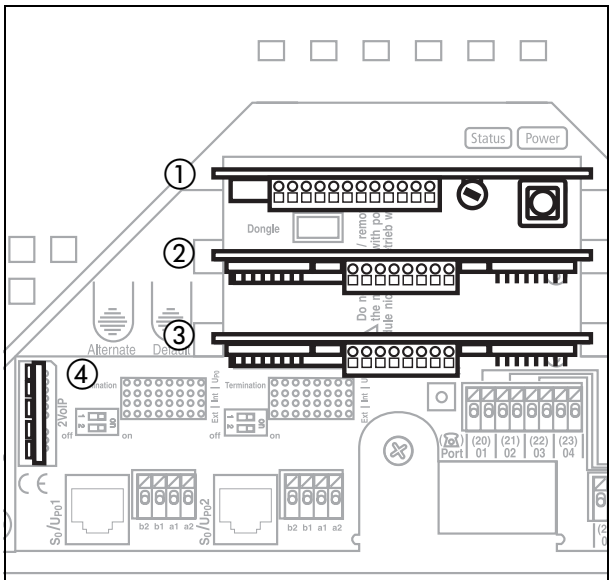


Abb. 10: Expansion slots on the base circuit board

① Expansion slot A for
- COMpact POTS module
- COMpact 2POTS module
- COMpact TSM module
- COMpact 2ISDN module

② Only for the COMpact 5020 VoIP: Expansion slot B for
- COMpact POTS module
- COMpact 2POTS module
- COMpact TSM module
- COMpact 2ISDN module

③ Only for the COMpact 5020 VoIP: Expansion slot C for
- COMpact POTS module
- COMpact 2POTS module
- COMpact TSM module
- COMpact 2ISDN module

Connecting to the Network Provider

This section describes how to connect to the NT or to the analogue wall socket for the network provider. Whenever possible, a difference is made in whether the device is to be connected directly or the lines are to be laid permanently. In addition, this section describes how to connect the PBX to the DSL connection (VoIP) via a DSL router. Both illustrations at the end provide an overview of how the two analogue connections and DSL are connected. (Abb. 11) as well as for an ISDN connection and DSL (Abb. 12).

Warning: *Touching the voltage-carrying conductors or the telephone connections may cause a life-threatening electric shock.*

→ *Remove the power plugs for both the PBX and all peripheral equipment from the power socket before you open the casing.*

Important: *Improper use may cause, e.g. functional restrictions or interference, the destruction of the device or, in a worst case scenario, personal injury.*

→ *Only connect equipment that is compatible to the intended use of the PBX.*

Abb. 11: Two analogue connections and DSL

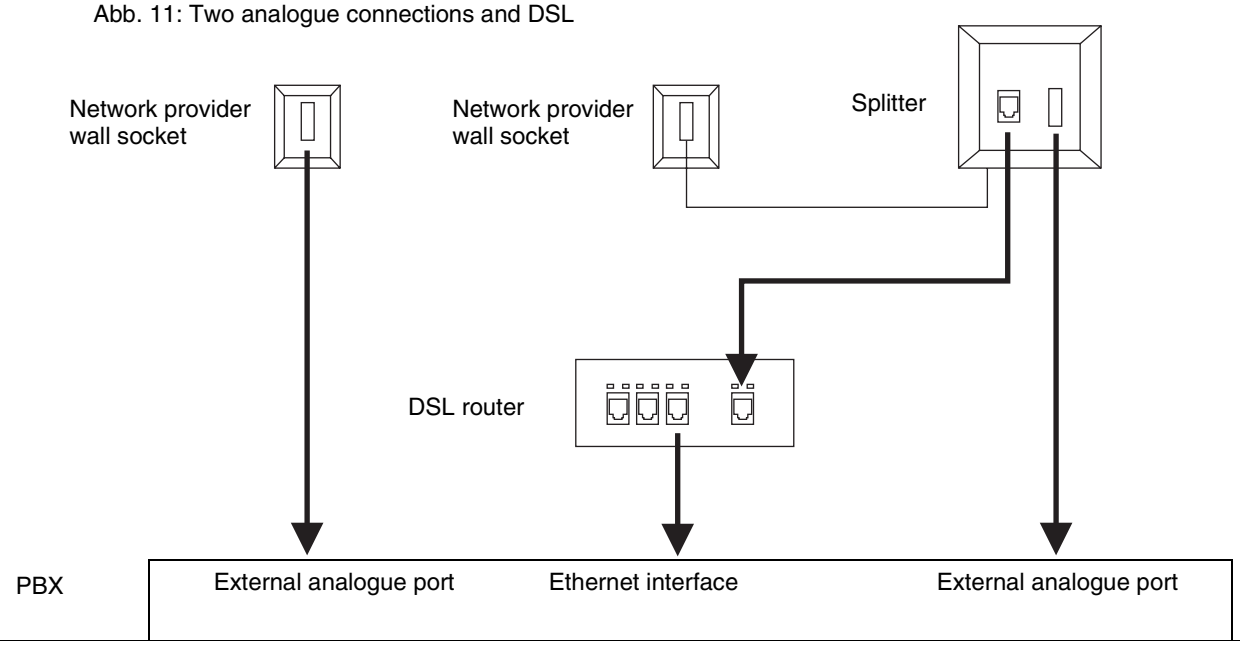
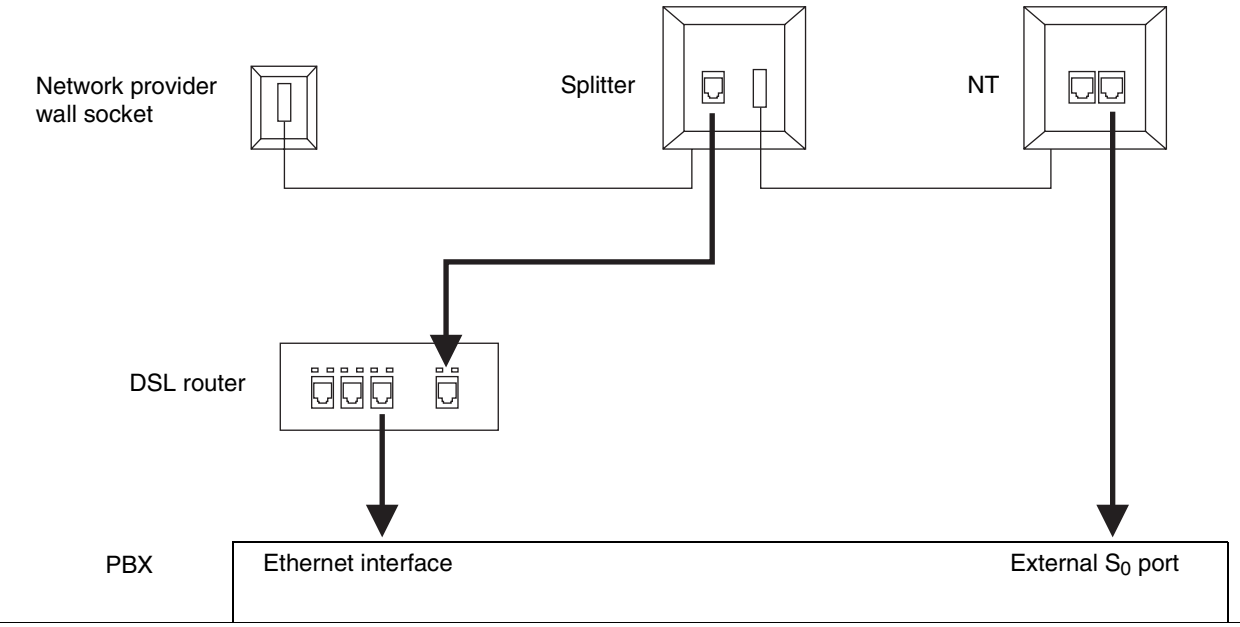


Abb. 12: ISDN connection and DSL



Connecting the analogue connection directly to the external analogue port

Requirements

✔ Minimal distance between the devices

Note: If the analogue connection is relatively far away from the PBX, a cable must first be laid.

✔ The RJ-11 (6P/4C) connection cable included in the COMpact POTS module package set to RJ-11 (6P/4c)

✔ In Germany, set the COMpact POTS module RJ-11 adapter included in the package to TAE-F

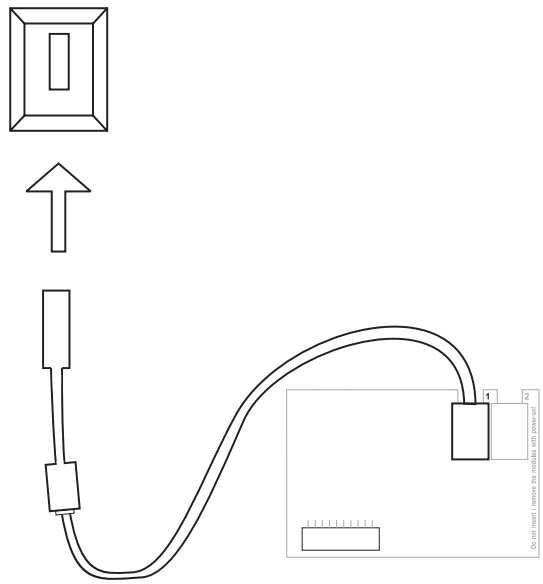
Steps to take

1. Insert one end of the connection cable into the Western socket on the COMpact POTS module. See Abb. 13.
2. In Germany: Insert the other end of the connection cable into the Western socket on the adapter. See Abb. 13.

Warning: *Voltages that run through the connection socket of the network provider can cause life-threatening electric shocks.*

→ *Do not connect the PBX until the casing on the connection socket of the network provider is closed again.*

Abb. 13: Connecting the analogue connection



Connecting the cable and the connection socket to the analogue connection

Warning: *Power surges, which can occur during electrical storms, can cause life-threatening electric shocks or damage/destroy the PBX.*

→ *Lay all the cable inside the building.*

Requirements

✔ Installation cable (for example, J-Y(St)Y 2x2x0,6) with the following characteristics:

- One twisted pair per analogue connection
- Unscreened; however: screened for unfavourable conditions, for example, near a strong transmitter or an electrical power line

✔ One TAE jack with F-coding

Note: Outside of Germany, use an RJ-11 socket (6P/4C).

✔ Distance/line length between the devices depends on the cable used:

- Maximum 800 m for a cable with a pair diameter of 0.6 mm

Steps to take

1. Lay the line.

Note: Prevent interference. Avoid laying long lengths of parallel lines, especially next to mains. Twist the pairs.

2. Attach the wires to the two terminal clamps in the external connection of the network provider.
3. Connect the wall socket to the terminal clamps on the external connection.

Warning: *Voltages that run through the connection socket of the network provider can cause life-threatening electric shocks.*

→ *Do not connect the PBX until the casing on the connection socket of the network provider is closed again.*

Connecting ISDN (NT) directly to the external S_0 port

Requirements

- ✔ Enabled operation mode “S_0 external” on the S_0 port in question. See Page 16.
- ✔ Enable the terminators at both ends of the connection – in the NT and in the PBX on the external S_0 port in question. See Page 16.
- ✔ Minimal distance between the devices

Note: If the NT is relatively far away from the PBX, a cable must first be laid.

- ✔ For connecting the NT to the external S_0 port on the base circuit board: The connection cable included in the package for the PBX.
- ✔ For connecting the NT to the external S_0 port on the COMpact 2ISDN module: The connection cable included in the package for the module.

Steps to take

1. Base circuit board: Insert one end of the ISDN cable into the Western socket “$S_0$1/U_{P0}1”. See Abb. 15.

   COMpact 2ISDN module: Attach the wires to the four terminal clamps in the S_0 port in question. While doing this, note the colours of the wires and the labels on the terminal clamps. See Abb. 14.

2. Insert the other end of the ISDN cable into the Western socket on the NT. See Abb. 15 and Abb. 14.

Abb. 14: Connecting the NT to the COMpact 2ISDN module

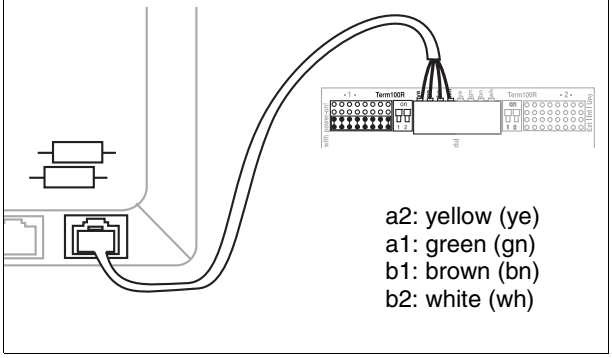
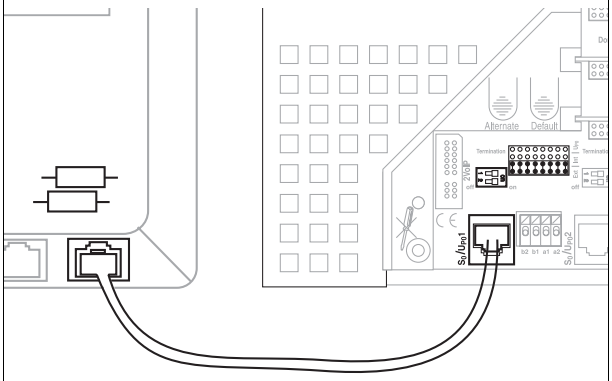


Abb. 15: Connecting the NT to the base circuit board



Laying cable between the external S_0 port and ISDN (NT)

Warning: *Power surges, which can occur during electrical storms, can cause life-threatening electric shocks or damage/destroy the PBX.*

→ *Lay all the cable inside the building.*

Requirements

- ✔ Enabled operation mode “S_0 external” on the S_0 port in question. See Page 16.
- ✔ Enable the terminators at both ends of the connection – in the NT and in the PBX on the external S_0 port in question. See Page 16.
- ✔ The distance/line length between the devices depends on the connection type:
  - Maximum 150 m for a Point-to-Multipoint connection
  - Maximum 1000 m for a Point-to-Point connection
- ✔ Installation cable (for example, J-Y(St)Y 2x2x0,6) with the following characteristics:
  - 4-core
  - Unscreened; however: screened for unfavourable conditions, for example, near a strong transmitter or an electrical power line
  - Preferably star quad stranding

Note: If you would like to install an external S_0 bus with wall sockets, please refer to Chapter : Connecting the ISDN terminal device directly on page 24.

Steps to take

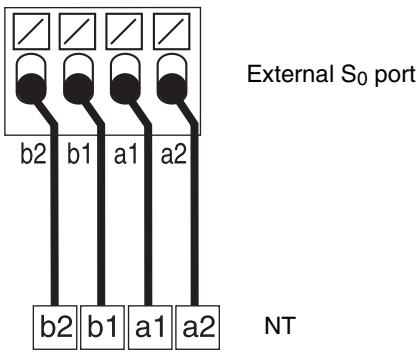
1. Attach the wires to the four terminal clamps in the NT.

Note: When assigning the individual wires, orient yourself with the identifiers subsequently listed or refer to VDE 0815 when identifiers deviate.

		Cable with two twin wires	Cable with star quad
Physical circuit/ pair 1	a1	Red	Without ring
	b1	Black	Single rings, 17 mm spacing
Physical circuit/ pair 2	a2	White	Double rings, 34 mm spacing
	b2	Yellow	Double rings, 17 mm spacing

2. Connect the NT to the four terminal clamps on the external S_0 port. See Abb. 16.

Abb. 16: Wire up the NT and the external S_0 port



Connect the DSL connection to the Ethernet port

Important: *If you would like to integrate the PBX into an existing network, please contact the system administrator responsible for this. Making changes to an existing network may cause considerable malfunctions. In addition, please note the PBX factory settings for the Ethernet configuration described in Page 31.*

Requirements

✔ Minimal distance between the devices

✔ A DSL router that is specifically designed for VoIP data communication (SIP aware)

Note: If this is not the case, several of the ports on the router necessary for VoIP data communication must be enabled (RTP port and SIP-UDP ports) (Port Forwarding). A list of the ports used in the PBX can be found in the configuration manager on the PBX under ***Administration ▸ Port overview****.*

✔ The patch cable included in the package

Steps to take

1. Insert the end of the cable into the Ethernet socket on the PBX. See Abb. 17.

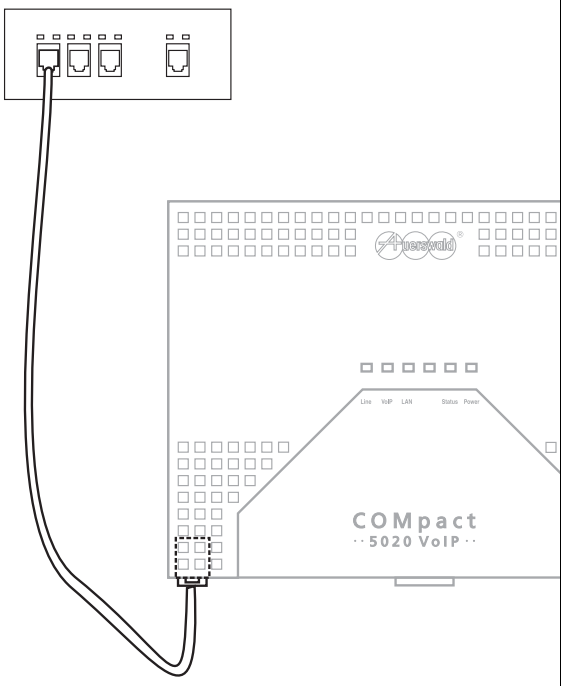
2. Insert the other end of the cable into the output socket on the DSL router or into an existing network outlet.

Note: To connect the DSL router to the network provider, please refer to the documentation provided by the network provider and included with the DSL router. See also Abb. 11 and Abb. 12 on page 18.

Further steps

▷ Configure the necessary network settings on the DSL router and/or on the PBX at the end of commissioning. See Page 31.

Abb. 17: Connecting the DSL router



Connecting Analogue Devices

This section describes how to connect different analogue terminal devices to the a/b port. Whenever possible, a difference is made whether the device is connected directly or the fixed lines are laid.

Warning: *Touching the voltage-carrying conductors or the telephone connections may cause a life-threatening electric shock.*

→ *Remove the power plugs for both the PBX and all peripheral equipment from the power socket before you open the casing.*

Important: *Improper use may cause, e.g. functional restrictions or interference, the destruction of the device or, in a worst case scenario, personal injury.*

→ *Only connect equipment that is compatible to the intended use of the PBX.*

Connecting analogue terminal devices directly to the internal a/b port

Requirements

✔ Minimal distance between the devices

Note: If the terminal device is placed a considerable distance away from the PBX, the cable and the wall sockets must be permanently installed. See Page 22.

✔ Using the first three internal a/b ports

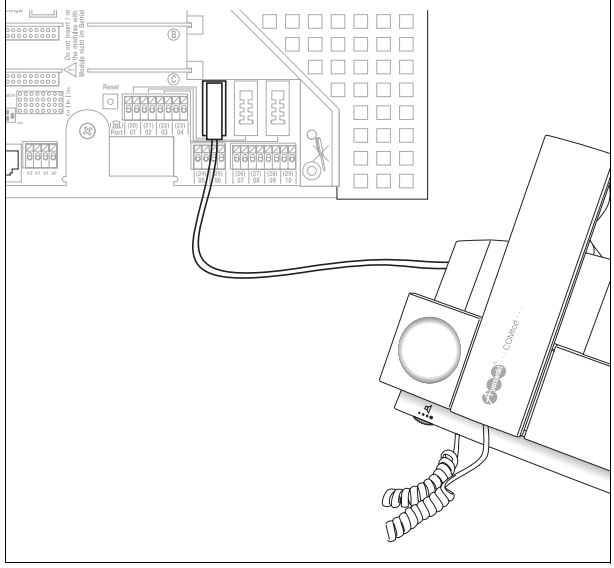
Note: Only terminal clamps are available for the other a/b ports.

Steps to take

1. Connect the terminal device to an internal a/b port as shown in Abb. 18.

Note: The sockets on the PBX are equally suitable for all devices.

Abb. 18: Connecting the analogue terminal



Installing cables and wall sockets for the internal a/b port

Warning: *Power surges, which can occur during electrical storms, can cause life-threatening electric shocks or damage/destroy the PBX.*

→ *Lay all the cable inside the building.*

→ *Do not use the a/b ports to connect external private branch exchanges.*

Requirements

✔ Installation cable (for example, J-Y(St)Y 2x2x0,6) with the following characteristics:

- One twisted pair per a/b port
- Unscreened; however, screened for unfavourable conditions, for example, near a strong transmitter or an electrical power line

✔ A TAE jack with the following characteristics:

- For telephones or combination fax/answering machines, a single TAE jack with F-coding (a socket labelled with an “F”)
- For fax machines, modems and answering machines, a TAE jack that also has a socket with N-coding.

Note: Outside of Germany, use Western sockets or the analogue wall sockets normally used in the country in question.

✔ Distance/line length between the devices depends on the cable used:

- Maximum 800 m for a cable with a pair diameter of 0.6 mm

Steps to take

1. Lay the line.

Note: Prevent interference. Avoid laying long lengths of parallel lines, especially next to mains. Twist the pairs.

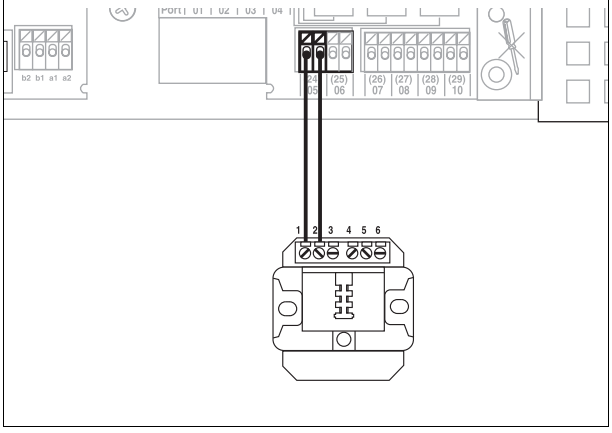
2. Attach the wires to the two terminal clamps in the internal a/b port. See Abb. 19.
3. Connect the wall sockets to the terminal clamps in the internal a/b port. See Abb. 19.

Further steps

▷ Connect the terminal devices to the wall sockets.

Note: For TAE jacks, insert the connection plug for the telephones or combination fax/answering machines into the socket labelled with “F” and insert the connection plug of the remaining devices into the socket labelled with “N”.

Abb. 19: Wall sockets on the internal a/b port



Connecting ISDN Terminal Devices

This section describes how to connect the different ISDN terminal devices to the S_0 or U_{P0} port. If possible, a difference is made in whether the device is connected directly or the lines are permanently installed.

Warning: *Touching the voltage-carrying conductors or the telephone connections may cause a life-threatening electric shock.*

→ *Remove the power plugs for both the PBX and all peripheral equipment from the power socket before you open the casing.*

Important: *Improper use may cause, e.g. functional restrictions or interference, the destruction of the device or, in a worst case scenario, personal injury.*

→ *Only connect equipment that is compatible to the intended use of the PBX.*

Connecting ISDN terminal devices directly to the internal S_0 port

Requirements

✔ Enabled operation mode "S_0 internal" on the S_0 port in question. See Page 16.

✔ In the PBX, enabled the terminators on the internal S_0 port in question. See Page 16.

✔ Minimal distance between the devices. Maximum length of the connecting cables to be used: 10 m.

Note: If the terminal device is placed a considerable distance away from the PBX, the cable and the wall sockets must be permanently installed. See Page 25.

✔ Using an internal S_0 port on the base circuit board

Note: The S_0 ports on the COMpact 2ISDN module are not equipped with a Western socket.

✔ For connecting multiple terminal devices on one internal S_0 port: one ISDN multiplug

Note: The Auerswald ISDN Multiplug and ISDN Autoswitch are available for this type of wiring as optional accessories in specialised stores. In addition, the ISDN Autoswitch provides the option of switching a single emergency telephone from the internal to an external S_0 port during a power failure. The telephone used for this must support emergency operation.

Steps to take

1. Single terminal device: Connect the terminal device as shown in Abb. 20 to an internal S_0 port.

   Multiple terminal devices: Connect the ISDN Multiplug as shown in Abb. 21 to an internal S_0 port.

2. Multiple terminal devices: Connect the terminal devices to the ISDN multiplug.

Abb. 20: Connecting the ISDN terminal device

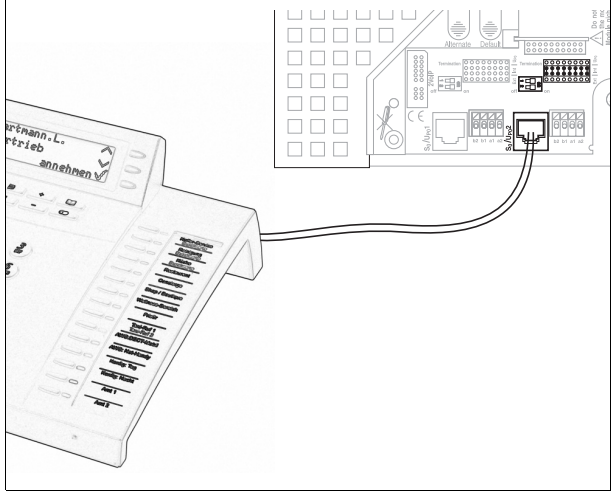
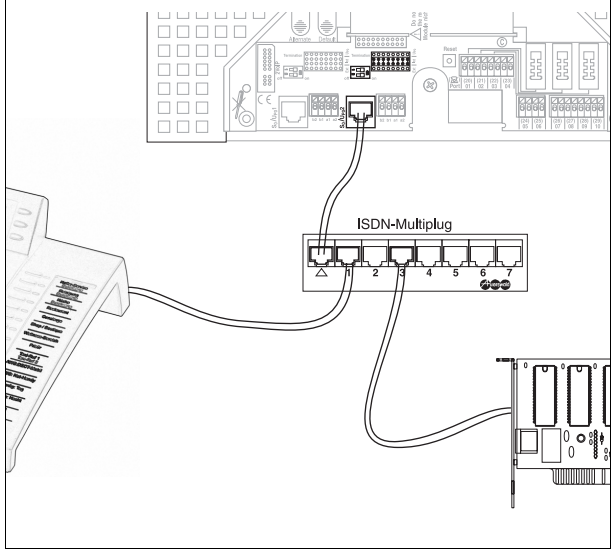


Abb. 21: Terminal devices via an ISDN multiplug



Connecting the cable and wall sockets to the internal S_0 port (internal S_0 bus)

Warning: *Power surges, which can occur during electrical storms, can cause life-threatening electric shocks or damage/destroy the PBX.*

→ *Lay all the cable inside the building.*

Requirements

✔ Enabled operation mode "S_0 internal" on the S_0 port in question. See Page 16.

✔ In the PBX, enabled or disabled the terminators on the internal S_0 port in question, depending on the bus variant. See also Page 16.

- Disabled for a short passive bus in two directions. See Abb. 23.
- Enabled for a short passive bus in one direction, for extended passive bus and for Point-to-Point wiring. See Abb. 22, Abb. 24 and Abb. 25 on page 26.

✔ Installation cable (for example, J-Y(St)Y 2x2x0,6) with the following characteristics:

- 4-core
- Unscreened; however: screened for unfavourable conditions, for example, near a strong transmitter or an electrical power line
- Preferably star quad stranding

✔ ISDN wall sockets (for example, IAE or UAE8)

Note: If possible, only use wall sockets of one type.

✔ Distance/line length between the devices as well as the number of wall sockets, depending on the bus variant:

- Maximum of 150 m and twelve wall sockets for one short passive bus. This bus can be laid in one direction or in two directions from the internal S_0 port. See Abb. 22 and Abb. 23.

Note: Also for a bus with twelve wall sockets, this restriction applies to a max. of eight devices.

Note: Wiring in more than two directions (star configuration) is not permitted.

- Maximum of 500 m and four wall sockets for one extended passive bus. For this bus variant, the wall sockets are connected on the last 35 m. The first 465 m remain free. See Abb. 24.
- Maximum 1000 m and one wall socket for Point-to-Point wiring. See Abb. 25 on page 26.

Abb. 22: Short passive bus in one direction

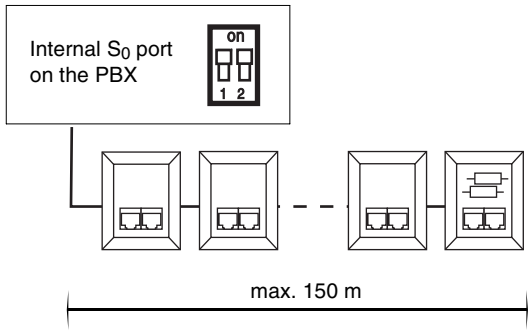


Abb. 23: Short passive bus in two directions

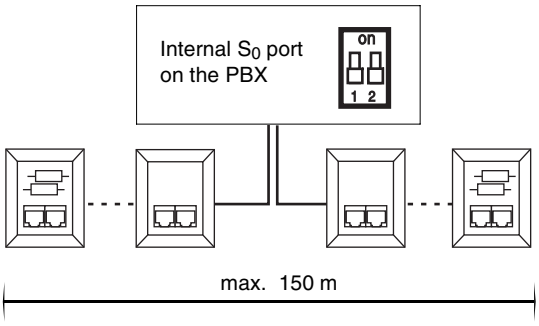


Abb. 24: Extended passive bus

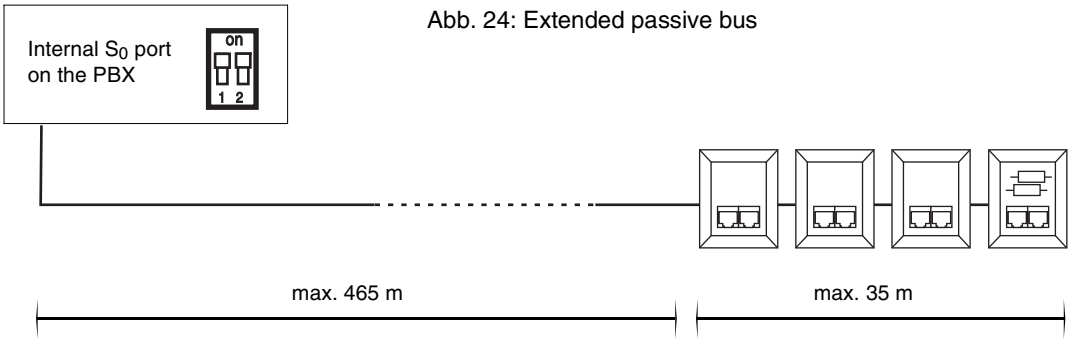
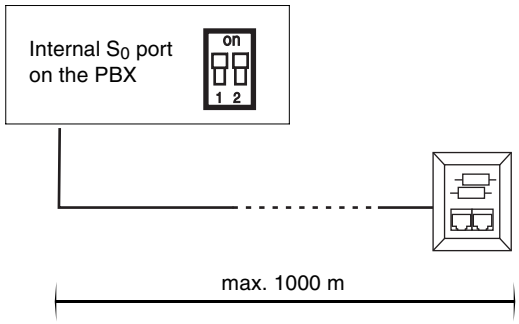


Abb. 25: Point-to-Point wiring



Steps to take

1. Lay the lines according to the selected bus variant.
2. Attach the wires to the four terminal clamps in the internal S_0 port.

Note: When assigning the individual wires, orient yourself with the identifiers subsequently listed or refer to VDE 0815 when identifiers deviate.

		Cable with two twin wires	Cable with star quad
Physical circuit/ pair 1	a1	Red	Without ring
	b1	Black	Single rings, 17 mm spacing
Physical circuit/ pair 2	a2	White	Double rings, 34 mm spacing
	b2	Yellow	Double rings, 17 mm spacing

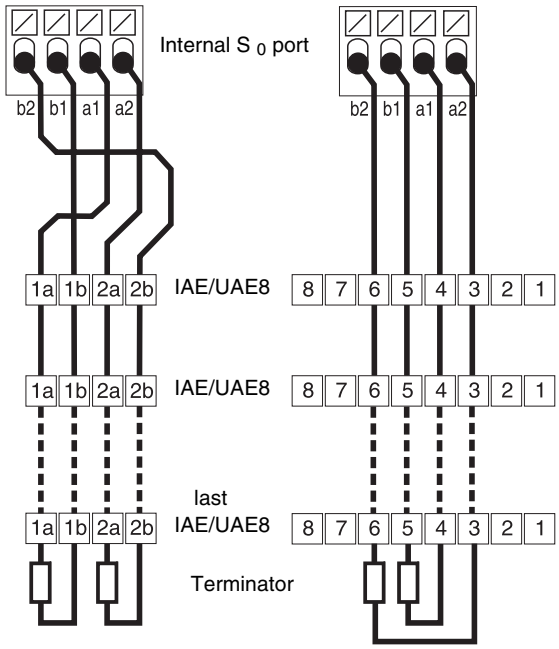
3. Connect the IAE or UAE8 sockets to the terminal clamps on the internal S_0- port. See Abb. 26.
4. Equip the last wall socket with two terminators (100 Ω; Load capacity min. 0.25 W). See Abb. 26.

Note: For a short passive bus in two directions, equip the wall sockets on both ends with terminators.

Further steps

▷ Connect the terminal devices to the wall sockets.

Abb. 26: Wire the wall sockets to the internal S_0 port.



Connecting ISDN terminal devices directly to the internal U_{P0} port

Requirements

✔ Enabled operation mode "U_{P0} internal" on the S_0 port in question. See Page 16.

✔ In the PBX, enable the terminators on the internal U_{P0} port in question. See Page 16.

✔ Minimal distance between the devices. Maximum length of the connecting cables to be used: 10 m.

Note: If the terminal device is placed a considerable distance away from the PBX, the cable and the wall sockets must be permanently installed. See Page 27.

✔ Using an internal U_{P0} port on the base circuit board

Note: The U_{P0} ports on the COMpact 2ISDN module are not equipped with a Western socket.

✔ One U_{P0}/S_0 adapter

Note: To connect a single COMfortel 1500/2500 system telephone, no U_{P0}/S_0 adapter is required. If two COMfortel 1500/2500 system telephones should be connected to the U_{P0} port, another U_{P0}/S_0 adapter is required.

Steps to take

1. Single COMfortel 1500/2500: Connect the COMfortel 1500/2500 to an internal U_{P0} port. See Abb. 27 on page 27.

   Another terminal device or two COMfortel 1500/2500 units: Connect the U_{P0}/S_0 adapter as shown in Abb. 28 on page 27 to an internal U_{P0} port.

2. Another terminal device or two COMfortel 1500/2500 units: Connect the terminal devices to the U_{P0}/S_0 adapter.

Abb. 27: Connect the COMfortel 1500/2500 directly

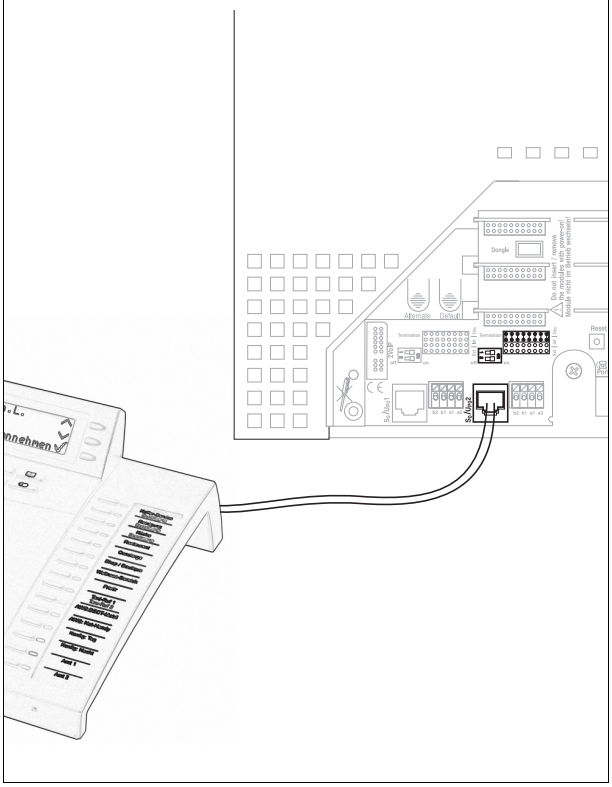
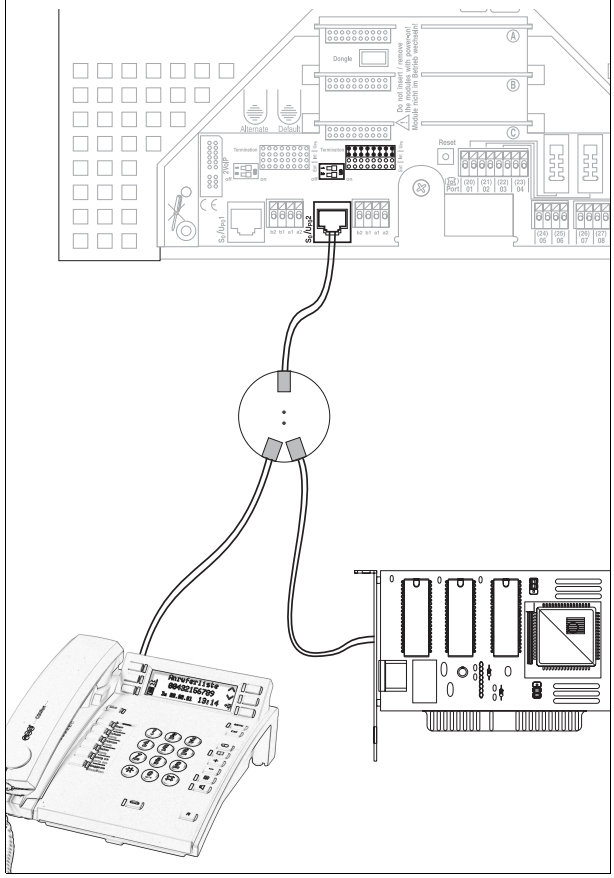


Abb. 28: Connect the terminal devices via the U_{P0}/S_0 adapter



Installing the cable and wall socket for the internal U_{P0} port

Warning: *Power surges, which can occur during electrical storms, can cause life-threatening electric shocks or damage/destroy the PBX.*

→ *Lay all the cable inside the building.*

Requirements

✔ Enabled operation mode "U_{P0} internal" on the S_0 port in question. See Page 16.

✔ In the PBX, enable the terminators on the internal U_{P0} port in question. See Page 16.

✔ Installation cable (for example, J-Y(St)Y 2x2x0,6) with the following characteristics:

- One twisted pair per U_{P0} port
- Unscreened; however: screened for unfavourable conditions, for example, near a strong transmitter or an electrical power line

✔ One ISDN wall socket (for example, IAE or UAE8)

Attention: *Terminators integrated into the wall sockets are destroyed and can therefore cause damage to the device.*

→ *Do not install terminators on one end of a line connected to the U_{P0} port, as opposed to the S_0 port. Terminators are already integrated into the terminal devices (COMfortel 1500/2500 or U_{P0}/S_0 adapters).*

→ *Remove the terminators already integrated in the wall sockets in order to use the sockets on the U_{P0} port.*

✔ Distance/line length between the devices depends on the cable used:

- Maximum 600 m for a screened cable with a pair diameter of 0.6 mm
- Maximum 1000 m for a unscreened cable with a pair diameter of 0.6 mm

✔ One U_{P0}/S_0 adapter, depending on the device to be connected

Connecting ISDN Terminal Devices

Note: To connect a single COMfortel 1500/2500 system telephone, no U_{P0}/S_0 adapter is required. If two COMfortel 1500/2500 system telephones should be connected to the U_{P0} port, another U_{P0}/S_0 adapter is required.

Note: When using a U_{P0}/S_0 adapter, you do not need to use an ISDN wall socket. The U_{P0}/S_0 adapter can be mounted permanently on the wall and firmly connected with both screw terminals on the back of the PBX. See Abb. 30.

Steps to take

1. Lay the line.

Note: Prevent interference. Avoid laying long lengths of parallel lines, especially next to mains. Twist the pairs.

2. Attach the wires to the two middle terminal clamps in the internal U_{P0} port. See Abb. 32.
3. With an ISDN wall socket: Connect the IAE or UAE8 socket to the terminal clamps on the internal U_{P0} port. See Abb. 32, Abb. 29 and Abb. 31.

   Only for U_{P0}/S_0 adapters: Connect both screw terminals at the back of the U_{P0}/S_0 adapter to the terminal clamps on the internal U_{P0} port. See Abb. 30.
4. With an ISDN wall socket: If necessary, connect the U_{P0}/S_0 adapter.

Further steps

▷ Connect the terminal devices to the wall socket or to the connection sockets on the U_{P0}/S_0 adapter.

Abb. 29: COMfortel 1500/2500 via an ISDN wall socket

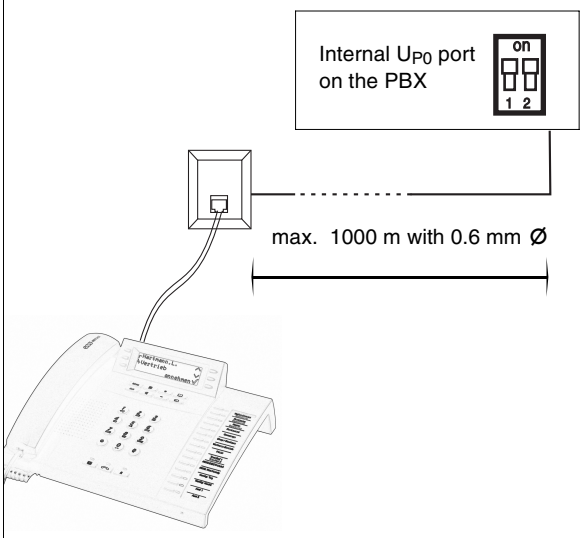


Abb. 30: Connection via a fixed U_{P0}/S_0 adapter

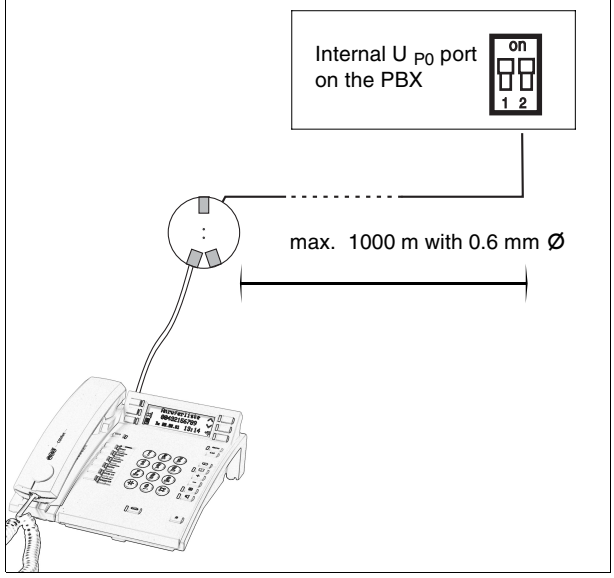


Abb. 31: Connection via a U_{P0}/S_0 adapter and an ISDN wall socket

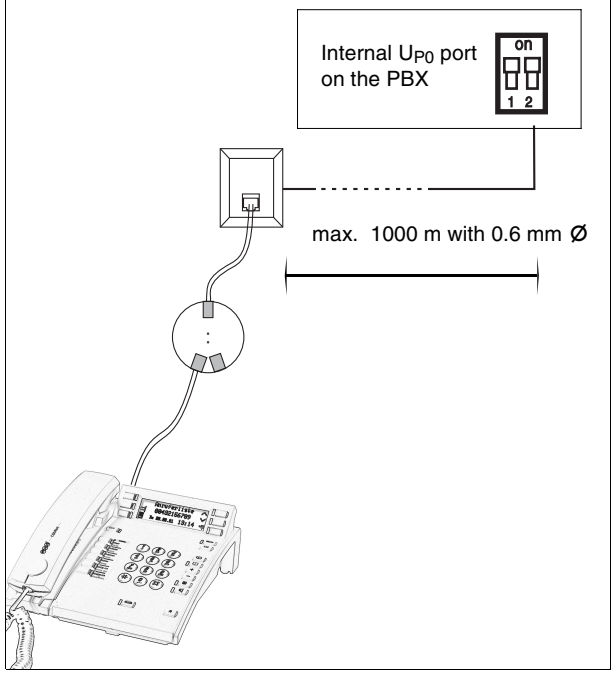
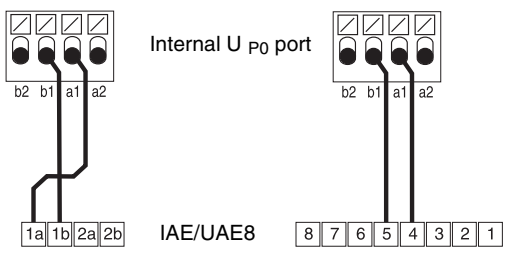


Abb. 32: Connecting the wall sockets to the internal U_{P0} port



Connecting Other Devices

This section describes how to connect a printer to the PBX for printing out call data.

Warning: *Touching the voltage-carrying conductors or the telephone connections may cause a life-threatening electric shock.*

→ *Remove the power plugs for both the PBX and all peripheral equipment from the power socket before you open the casing.*

Important: *Improper use may cause, e.g. functional restrictions or interference, the destruction of the device or, in a worst case scenario, personal injury.*

→ *Only connect equipment that is compatible to the intended use of the PBX.*

Connecting the printer

Requirements

✔ One USB cable

Important: *The length of the USB cable may be a maximum of 3 m total.*

Steps to take

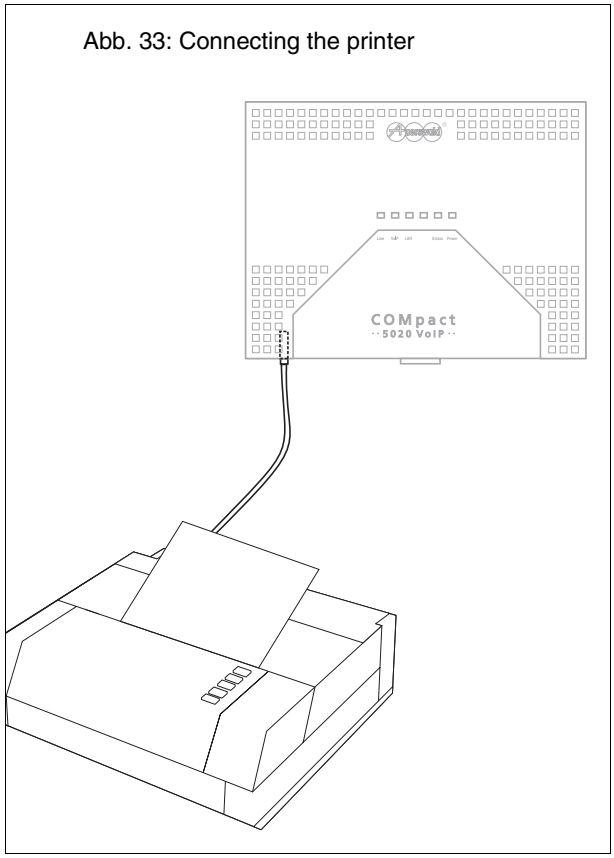
1. Insert the flat connector on the USB cable into the USB socket on the PBX, and insert the other connector into the USB socket on the printer. See Abb. 33.

Further steps

▷ Permanent call data printouts: At the end of commissioning, you need to turn on permanent call data display in the configuration manager COMlist and depending on the printer used.

▷ Hotel printing function: At the end of commissioning, you need to enable the hotel function and set it up in the COMset configuration manager.

Abb. 33: Connecting the printer



Commissioning

This section describes how to place the PBX into operation. This includes turning on the PBX, setting up the the network connection between the computer and the PBX as well as creating the initial configuration.

Turning on the PBX

Warning: *Touching the voltage-carrying conductors or the telephone connections may cause a life-threatening electric shock.*

→ *Therefore, close the casing before you put the PBX into operation.*

Steps to take

1. Connect the PBX with a freely accessible 230 V mains socket.

The "Status" LED and the "Power" LED light up in read and orange for several seconds.

LED "Status"	LED "Power"	PBX status
Red	Red	The boot partition is being tested.
Orange	Red	The kernel is being loaded from the boot partition.
Green	Red	The kernel is being initialised.
Green	Orange	The kernel modules are being loaded.
Green	Orange (blinking)	The database is being initialised/converted.
Green	Green	The PBX is ready for operation.

If both LEDs are lit green, the PBX is ready for operation.

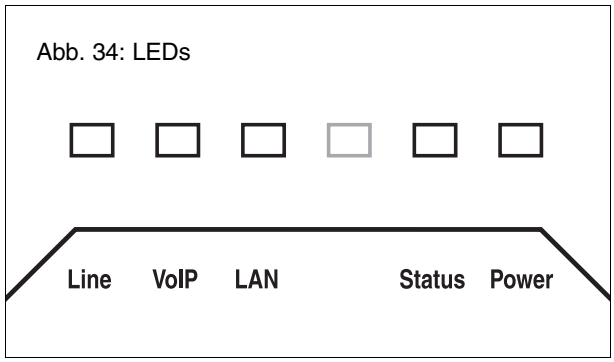
Note: If the "Power" LED remains continuously lit in red, an error has occurred. Please contact your dealer or the manufacturer directly.

Further steps

▷ If applicable, hook up the analogue connections.

▷ Connect terminal devices with a separate power supply to the 230 V mains.

Abb. 34: LEDs



Configuring the PBX (quick setup)

Requirements

✔ A PC with the following features:

- Intel Pentium 800 MHz or compatible processor
- Windows 2000 (as of Service Pack 4), Windows XP (as of Service Pack 2), Windows Vista, Mac OS X, Linux as of SuSE 7.3
- Memory (RAM: 256 MB, recommended 512 MB; for Windows Vista: 512 MB, recommended 1 GB
- Browser for the configuration: Recommended is Microsoft Internet Explorer as of version 6.0, Netscape Navigator as of version 8.0, Mozilla Firefox as of version 2.0; with HTML 3, HTTP 4.0, JavaScript 1.0, CSS 2.0, AJAX support
- Network card (the computer must be equipped with a network card and the required driver installed)
- Internet protocol TCP/IP (**T**ransmission **C**ontrol **P**rotocol /**I**nternet **P**rotocol)
- CD-ROM or DVD drive
- Mouse or compatible pointing device
- SVGA graphics card with a resolution of 800 x 600, recommended 1024 x 768, and 65536 colours (16 bit)

✔ Existing Ethernet connection between the computer and the PBX. See Page 33.

✔ Computer and PBX on the same network

Note: The PBX is delivered with the following default network settings:

IP address	192. 168. 0. 240
Subnet mask	255. 255. 255. 0
Gateway	0. 0. 0. 0
DHCP	Disabled

✔ Configuration of a static IP address on the computer, if the computer should be connected directly to the PBX. See Page 31. If the Ethernet configuration on the PBX delivered from the factory has not been changed, the following IP addresses are available:

- 192. 168. 0. 1 to 192. 168. 0. 254
- except for 192. 168. 0. 240 (IP address of the PBX)

✔ Changing the Ethernet configuration of the PBX if changes to the settings on the computer are not possible or you would like to integrate the PBX into an existing network. See Page 32. The following options are possible:

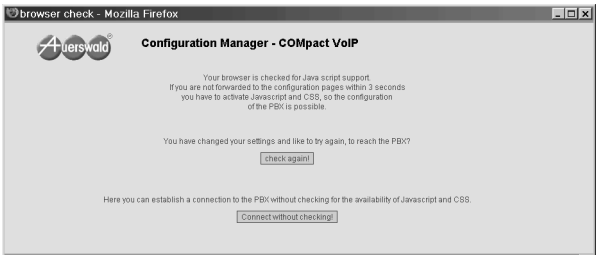
- Configure a permanent IP address, subnet mask and gateway address
- Configure the PBX as the DHCP client that receives its IP address from a DHCP server (computer or router)

Important: *Please contact the responsible system administrator and configure the settings according to his instructions.*

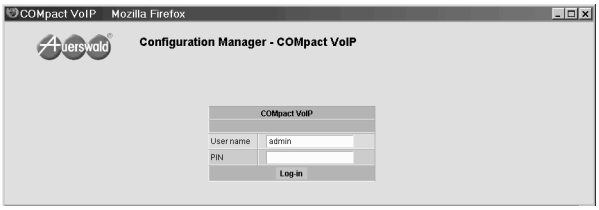
Steps to take

1. Start a browser (e. g. Mozilla Firefox).
2. Enter **http://** and the IP address of the -PBX in the address field of the browser.

   The browser settings are checked.

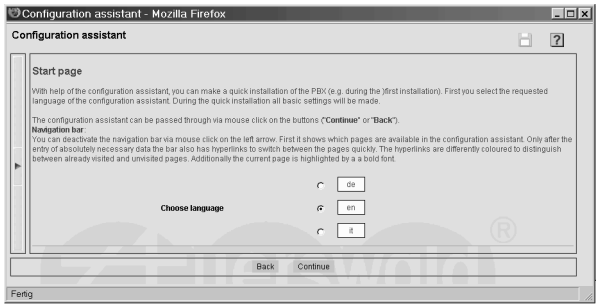

browser check - Mozilla Firefox
Configuration Manager - COMpact VoIP
Your browser is checked for Java script support.
If you are not forwarded to the configuration pages within 3 seconds you have to activate Javascript and CSS, so the configuration of the PBX is possible.
You have changed your settings and like to try again, to reach the PBX?
check again!
Here you can establish a connection to the PBX without checking for the availability of Javascript and CSS.
Connect without checking!

   The login window opens.



3. Enter the user name **admin**.
4. Click ***Log-in***.

   The configuration manager configuration wizard opens.



5. Use the configuration wizard to carry out a quick setup of the PBX. During the course of the quick setup, all the basic settings are configured.

Note: If you would like to skip the quick setup and configure all of the settings directly in the configuration manager, do the following: On this page and the next, select the language and enter the PIN, and then click ***Next****. You can then jump to the end of the quick setup via the navigation bar to the left (by clicking the arrow to open).*

Further steps

▷ Configure all the rest of the settings using the configuration manager.

Note: The PBX configuration manual (available as a PDF on the accompanying Auerswald Mega Disk) includes configuration instructions as well as a detailed description of each feature on the PBX. It also includes information about the hardware and software requirements, about configuring the PBX as well as using the features. Please refer to the Online Help for additional information on the individual settings. This can be accessed from any page in the configuration manager by clicking the question mark icon [?].

Configuring the static IP address in the computer

Steps to take

Note: The following steps describe how to set the configuration on the operating systems, Windows 2000, XP and Vista. If using another operating system or one with significant differences to the basic settings, refer to the documentation of your operating system.

1. Click ***Start***.

2. Windows 2000: Select ***Settings***.

   Windows XP: Select ***Control Panel***.

   Windows Vista: Select ***Control Panel***.

3. Windows 2000: Double-click ***Network and Dial-up connections***.

   Windows XP: Double-click ***Network Connections***.

   Windows Vista: Double-click ***Network and Sharing Center***, and then click ***Manage network connections***.

4. Right-click the network connection to be configured.

5. Click ***Properties***.

6. Click ***Internet Protocol (TCP/IP)***.

7. Click ***Properties***.

8. Click ***Use the following IP address***.

9. Enter the IP address.

☞ *Note: No DNS settings are necessary.*

10. Click ***OK***.

☞ *Note: You may have to restart the computer.*

Changing the Ethernet configuration on the PBX

Requirements

✔ An internal telephone with tone dialling

Steps to take

1. Pick up the telephone receiver.
2. Enter one of the number sequences:

## 8 * 93 0 * 1 #	Switches DHCP on.
## 8 * 93 0 * 0 #	Switches DHCP off.
## 8 * 93 1 * Address #	Changes the IP address.
## 8 * 93 2 * Address #	Changes the subnet mask.
## 8 * 93 3 * Address #	Changes the gateway address.

☞ *Note: Always enter the address with 12 digits. For example, for the IP address 192.168. 21. 2, enter 192 168 021 002.*

☞ *Note: If the PBX is no longer configured with its factory settings, you need to enter the PBX admin PIN between the 8 and *.*

👂 You will then hear the confirmation tone (pulsating tone).

3. Hang up the receiver.

Querying the Ethernet configuration on the PBX

Requirements

✔ An internal telephone with tone dialling and CLIP capability, in order to display CLIP information sent from the PBX

Steps to take

1. Pick up the telephone receiver.
2. Enter one of the number sequences:

## 8 * 94 0 #	Query the DHCP client status.
## 8 * 94 1 #	Query the IP address.
## 8 * 94 2 #	Query the subnet mask.
## 8 * 94 3 #	Query the gateway address.

👂 You will then hear the confirmation tone (pulsating tone).

3. Hang up the receiver.

   👂 The telephone rings.

   👁 The setting is shown on the display.

4. Pick up the receiver and then hang it back up again in order to end the call and display.

Connecting the PC to the Ethernet port

Requirements

✔ Minimal distance between the devices

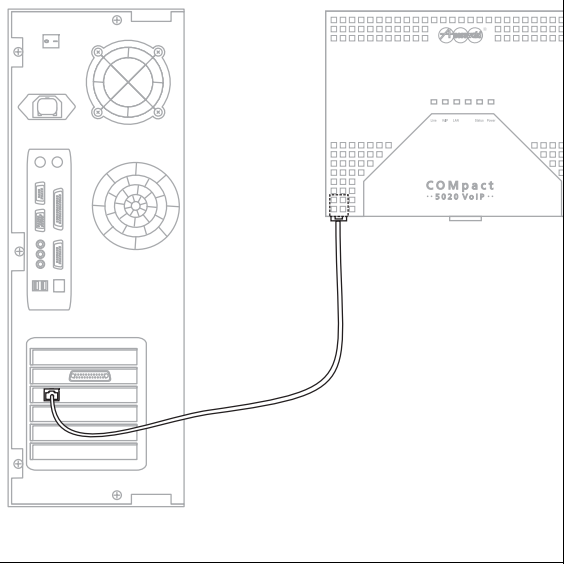
✔ The patch cable included in the package

Steps to take

1. Insert one end of the patch cable into the network socket on the computer. See Abb. 35.
2. Insert the other end of the patch cable into the Ethernet socket on the PBX. See Abb. 35.

Note: If the Ethernet port is required for the DSL connection, you need to connect the DSL router to the computer. For more information, please contact your system administrator. See Page 21.

Abb. 35: Connect the computer.



Connection Options

This section describes the various options for configuring the PBX – aside from the the internal network configuration options described in the previous section. In addition, various options are described for configuring the connected system telephones.

Configuring the PBX via an internal S_0 port (PPP internal)

Important: *Before you can configure the PBX over a dial-up connection, the settings described in the following must first be configured over an Ethernet connection.*

Requirements

- ✔ On the page ***COMset*** ▸ ***General settings*** ▸ ***Remote configuration*** configured internal CAPI dial-in number
- ✔ On the page ***Administration*** ▸ ***Server configuration*** configured local IP address and remote IP address (factory settings: 192.168.193.240 and 192.168.193.241)

Note: The local IP address is the IP address for the PBX and is entered in the browser address field after dialling into the system to be maintained remotely. After login, the remote IP address is assigned as the IP address for the duration of the computer access. This means that the computer and the PBX are on the same network and can communicate.

Important: *If the factory-set remote IP address is already being used on the computer network, thereby causing IP addresses to overlap, complications will occur. To avoid this, you must change the remote IP address and therefore the local IP address at the same time. This should result in both IP addresses being again located on the same network.*

- ✔ One of the following PINs is known:
  - Admin PIN
  - One Sub-Admin PIN

Note: The external PIN may also be used for the dial-up connection. Configure this beforehand on the page ***COMset*** ▸ ***General settings*** ▸ ***Remote configuration*** *.*

Note: A user PIN can also be used to log in.

- ✔ Existing internal ISDN connection between a computer and a PBX via one of the following devices:
  - Auerswald USB device (e. g. a COMfortel 2500)
  - ISDN PC controller
- ✔ Completed installation of the device driver

Note: For an Auerswald USB device, this refers to the USB, the CAPI-2.0 and CoNDIS-WAN drivers. For more information about installing drivers, please refer to the CAPI/TAPI manual that came with the device.

- ✔ The dial-up connection configured on the computer. See Page 38 for Windows XP and Page 39 Windows Vista.

Steps to take

Note: The following steps describe how to configure the settings on the operating systems, Windows XP and Vista. If using another operating system or one with significant differences to the basic settings, refer to the documentation of your operating system.

1. Click ***Start***.
2. Windows XP: Click ***Connect to*** and then the name of the connection.

   Windows Vista: Click ***Connect to***, then the name of the connection, and then finally ***Connect***.

   👁 The connection dialogue window is now opened.
3. Under ***Password***, enter the PIN for the user name displayed.
4. Click ***Dial***.

   👁 The connection symbol in the task bar (to the left next to the time) indicates whether the connection is active.

5. Start a browser (e. g. Mozilla Firefox).
6. Enter **http://** and the local IP address for PPP configuration in the address field of the browser.

   👁 The browser settings are checked.

   👁 The login window opens.
7. Enter your user name and PIN.

Note: The PIN entered here determines the authorisation level for the configuration. The external PIN cannot be used here.

8. Click ***Log-in***.

   👁 The configuration manager is now opened.
9. Make your changes.

Note: When the PBX is restarted, the dial-up connection disconnects and you must dial into the PBX again.

10. Once you have completely configured the PBX, click ***Logout***.
11. Then, disconnect the dial-up connection. To do this, right-click the connection symbol in the task bar, click ***Disconnect*** or ***Disconnect from*** and then the name of the connection.

Configuring the PBX remotely via the external S_0 port (PPP external)

Important: *Before you can configure the PBX over a dial-up connection, the settings described in the following must first be configured over an Ethernet connection.*

Requirements

✔ On the page ***COMset*** ▸ ***General settings*** ▸ ***Remote configuration*** configured remote switching number

Note: Select a number from the available external numbers on the PBX, not used for call distribution or other functions, to be used as the remote switching number.

Note: If no remote switching number has been configured, the PBX must be enabled internally for remote configuration using the programming function. See Page 39. After this, the PBX is accessible over each associated MSN/DDI.

✔ On the page ***COMset*** ▸ ***General settings*** ▸ ***Remote configuration*** configured dealer access number

Note: You can enter up to four telephone numbers as dealer access numbers; one of these numbers must be transmitted during a remote configuration.

Note: If no dealer access numbers have been entered or the telephone number transmitted does not correspond with the ones entered, the PBX must be enabled internally for remote configuration using the programming function. See Page 39.

✔ On the page ***Administration*** ▸ ***Server configuration*** configured local IP address and remote IP address (factory settings: 192.168.193.240 and 192.168.193.241)

Note: The local IP address is the IP address for the PBX and is entered in the browser address field after dialling into the system to be maintained remotely. After login, the remote IP address is assigned as the IP address for the duration of the computer access. This means that the computer and the PBX are on the same network and can communicate.

Important: *If the factory-set remote IP address is already being used on the computer network, thereby causing IP addresses to overlap, complications will occur. To avoid this, you must change the remote IP address and therefore the local IP address at the same time. This should result in both IP addresses being again located on the same network.*

✔ One of the following PINs is known:

- Admin PIN
- One Sub-Admin PIN

Note: The external PIN may also be used for the dial-up connection. Configure this beforehand on the page ***COMset*** ▸ ***General settings*** ▸ ***Remote configuration*** .

Note: A user PIN can also be used to log in.

✔ Existing external ISDN connection between a computer and a PBX via one of the following devices:

- Auerswald USB device (for example, a COMfortel 2500)
- ISDN PC controller

✔ Completed installation of the device driver

Note: For an Auerswald USB device, this refers to the USB, the CAPI-2.0 and CoNDIS-WAN drivers. For more information about installing drivers, please refer to the CAPI/TAPI manual that came with the device.

Note: Remote configuration over an analogue connection or a VoIP account is not possible.

✔ The dial-up connection configured on the computer. See Page 38 for Windows XP and Page 39 Windows Vista.

✔ Enable the PBX immediately before remote configuration, if no dealer access number has been entered or the transmission of the numbers entered is not possible on the computer being used. See Page 39.

Steps to take

Note: The following steps describe how to configure the settings on the operating systems, Windows XP and Vista. If using another operating system or one with significant differences to the basic settings, refer to the documentation of your operating system.

1. Click ***Start***.
2. Windows XP: Click ***Connect to*** and then the name of the connection.

   Windows Vista: Click ***Connect to***, then the name of the connection, and then click ***Connect to*** again.

   👁 The connection dialogue window is now opened.
3. Under ***Password***, enter the PIN for the user name displayed.
4. Click ***Dial***.

   👁 The connection symbol in the task bar (to the left next to the time) indicates whether the connection is active.

5. Start a browser (e. g. Mozilla Firefox).
6. Enter **http://** and the local IP address for PPP configuration in the address field of the browser.

   👁 The browser settings are checked.

   👁 The login window opens.
7. Enter your user name and PIN.

Note: The PIN entered here determines the authorisation level for the configuration. The external PIN cannot be used here.

8. Click ***Log-in***.

👁 The configuration manager is now opened.

9. Make your changes.

☞ *Note: When the PBX is restarted, the dial-up connection disconnects and you must dial into the PBX again.*

10. Once you have completely configured the PBX, click ***Logout***.

11. Then, disconnect the dial-up connection. To do this, right-click the connection symbol in the task bar, click ***Disconnect*** or ***Disconnect from*** and then the name of the connection.

Configuring the PBX remotely via the Internet

Requirements

☝ ***Important:*** *An internal network is usually protected from actions from the outside by, for example, a firewall integrated in the router. Please direct your questions for configuring your firewall to the system administrator responsible for this.*

✔ Existing Internet connection between the computer and the PBX (DSL)

✔ The external IP address on the PBX is known.

✔ On the page ***Administration*** ▸ ***Server configuration*** configured port for the web server

Steps to take

1. Start a browser (e. g. Mozilla Firefox).

2. Enter **http://** and the external IP address for the PBX as well as **:** and the web server port into the address field of the browser.

👁 The browser settings are checked.

👁 The login window opens.

3. Enter your user name and PIN.

4. Click ***Log-in***.

👁 The configuration manager is now opened.

5. Configure the changes you want.

Configuring system telephones via the PBX

✔ Existing connection between the computer and the PBX using one of the following internal connection options:

- USB connection of the computer to one of the internal system telephones
- Ethernet connection

☞ *Note: The COMfort 1000/1200/2000 system telephones can only be configured via a USB connection.*

✔ Completed installation of the device driver.

☞ *Note: For a USB connection, this refers to the USB driver and possibly the CAPI-2.0 driver. For more information about installing drivers, please refer to the CAPI/TAPI manual that came with the device.*

✔ Installed COMfortel Set configuration software as of version 1.8.16.

☞ *Note: The configuration software can be installed from the Auerswald Mega Disk.*

☞ *Note: To support Windows Vista, the COMfortel Set configuration software requires at least the following version: 2.0 or higher; available as of 2008.*

Steps to take

1. Start the COMfortel Set configuration software.

2. Click ***Option***.

3. Click ***Interface***.

4. USB connection: Select the **USB** interface, and click ***OK***.

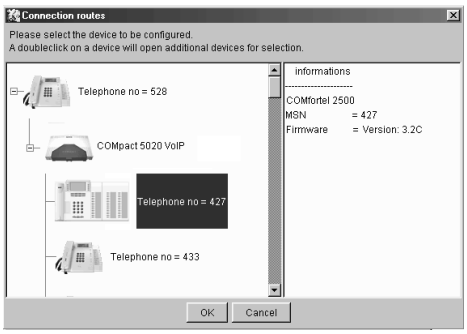
USB connection using the CAPI-2.0 driver installed: Select the **ISDN controller (CAPI 2.0)** interface, and click ***OK***.

Ethernet connection via the PBX: Select the **IP network** interface, enter the IP address for the PBX, and click ***OK***.

5. Click ***Open***.

6. Click ***Telephone***.

👁 The current connection to the PBX is displayed.



7. Double-click the system symbol to display all the connected system telephones.
8. Click system telephone to be configured, and then click ***OK***.

   The login window opens.

PIN entry
Please enter your authorization level and the PIN stored in the PBX.
If no user PIN has been assigned, start the transfer without the entry of a PIN via mouse click on "OK".
Authorization level:
Administrator
PIN:
******
OK
Cancel

9. Select the authorisation level you want on the PBX, enter the applicable PIN, and click ***OK***.

Note: For COMfort 1000/1200/2000 system telephones, you only need to enter the 6-digit system telephone PIN – if available.

The configuration is loaded.

10. Configure the settings you want.

Note: Once you have configured all the settings to your satisfaction, first save the configuration as a file on the hard drive and then in the telephone.

11. Click ***Save***.
12. Click ***File***.
13. Enter a name for the file and click ***OK***.
14. Click ***Save***.
15. Click ***Telephone***.

    The current connection to the PBX is displayed.

16. Double-click the system symbol to display all the connected system telephones.
17. Click system telephone to be configured, and then click ***OK***.

    The login window opens.

18. Select the authorisation level you want on the PBX, enter the applicable PIN, and click ***OK***.

    The configuration is saved.

Configuring system telephones remotely via the PBX

Important: *Before you can configure the system telephones remotely, you must first configure the settings listed at the end in the PBX.*

Requirements

✔ On the page ***COMset*** ▸ ***General settings*** ▸ ***Remote configuration*** configured remote switching number for system telephones

Note: Select a telephone number from the available external numbers on the PBX, which will not be used for call distribution or other functions, to be used as the remote switching number.

Note: If no remote switching number has been configured, the PBX must be enabled internally for remote configuration using the programming function. See Page 39. After this, the PBX is accessible over each associated MSN/DDI.

✔ On the page ***COMset*** ▸ ***General settings*** ▸ ***Remote configuration*** configured dealer access number

Note: You can enter up to four telephone numbers as dealer access numbers; one of these numbers must be transmitted during a remote configuration.

Note: If no dealer access numbers have been entered or the telephone number transmitted does not correspond with the ones entered, the PBX must be enabled internally for remote configuration using the programming function. See Page 39.

✔ Existing external ISDN connection between a computer and a PBX via one of the following devices:

- Auerswald USB device (for example, a COMfortel 2500)
- ISDN PC controller

✔ Completed installation of the device driver

Note: For an Auerswald USB device, this refers to the USB, the CAPI-2.0 and CoNDIS-WAN drivers. For more information about installing drivers, please refer to the CAPI/TAPI manual that came with the device.

Note: Remote configuration over an analogue connection or a VoIP account is not possible.

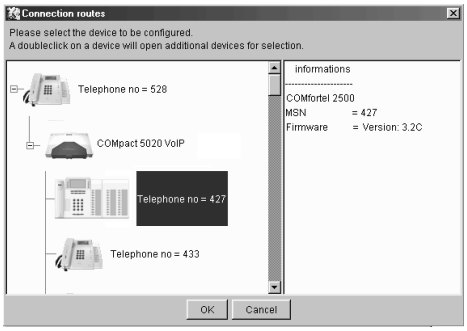
✔ Enable the PBX immediately before remote configuration, if no dealer access number has been entered or the transmission of the numbers entered is not possible on the computer being used. See Page 39.

Steps to take

1. Start the COMfortel Set configuration software.
2. Click ***Option***.
3. Click ***Interface***.
4. Select the **ISDN controller (CAPI 2.0)** interface, and click ***OK***.

   Or select the **IP network** interface, enter the IP address for the PBX, and click ***OK***.
5. Click ***Open***.
6. Click ***Telephone***.
7. Enter the remote switching number for system telephones configured in the PBX (including local city code and exchange line access number), and click ***OK***.

   The current connection to the PBX is displayed.



8. Double-click the system symbol to display all the connected system telephones.
9. Click system telephone to be configured, and then click ***OK***.

   The login window opens.

PIN entry
Please enter your authorization level and the PIN stored in the PBX.
If no user PIN has been assigned, start the transfer without the entry of a PIN via mouse click on "OK".
Authorization level:
Administrator
PIN:
OK
Cancel

10. Select the authorisation level you want on the PBX, enter the applicable PIN, and click ***OK***.

Note: For COMfort 1000/1200/2000 system telephones, you only need to enter the 6-digit system telephone PIN – if available.

   The configuration is loaded.

11. Configure the settings you want.

Note: Once you have configured all the settings to your satisfaction, first save the configuration as a file on the hard drive and then in the telephone.

12. Click ***Save***.
13. Click ***File***.
14. Enter a name for the file and click ***OK***.
15. Click ***Save***.
16. Click ***Telephone***.

   The current connection to the PBX is displayed.

17. Double-click the system symbol to display all the connected system telephones.
18. Click system telephone to be configured, and then click ***OK***.

   The login window opens.

19. Select the authorisation level you want on the PBX, enter the applicable PIN, and click ***OK***.

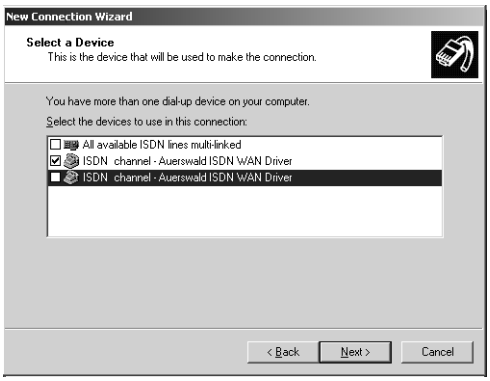
   The configuration is loaded.

Setting up a dial-up connection on Windows XP

Steps to take

1. Click ***Start***.
2. Click ***All Programs***.
3. Click ***Accessories***.
4. Click ***Communications***.
5. Click ***New Connection Wizard***.
6. Click ***Next***.
7. Click ***Connect to the Internet***, and then click ***Next***.
8. Click ***Set up my connection manually***, and then click ***Next***.
9. Click ***Connect using a dial-up modem***, and then click ***Next***.

   The available dial-up devices are displayed.


New Connection Wizard
Select a Device
This is the device that will be used to make the connection.
You have more than one dial-up device on your computer.
Select the devices to use in this connection:
All available ISDN lines multi-linked
ISDN channel - Auerswald ISDN WAN Driver
ISDN channel - Auerswald ISDN WAN Driver
< Back
Next >
Cancel

10. Enable the checkbox for the connection you want, and click ***Next***.

11. Under ***ISP Name***, enter any connection name, for example, "PBX + [customer name]" and click ***Next***.

12. Remote configuration: Under ***Phone number***, enter the remote switching number (including city code and exchange line access number) on the PBX, and click ***Next***.

Configuration via the internal S_0 port: Under ***Phone number***, enter the internal CAPI dial-in access number on the PBX, and click ***Next***.

13. Under ***User name***, enter "admin" and under ***Password*** as well as under ***Confirm password***, enter the admin PIN on the PBX.

Or: Under ***User name***, enter "external" and under ***Password*** as well as under ***Confirm password***, enter the external PIN on the PBX.

Or: Under ***User name***, enter the internal telephone number of a sub-admin, and under ***Password*** as well as under ***Confirm password***, enter the associated sub-admin PIN.

14. Disable the checkbox for the three options offered, and click ***Next***.

15. Enable the checkbox ***Add a shortcut to this connection to my desktop***, and click ***Finish***.

Setting up a dial-up connection on Windows Vista

Steps to take

1. Click ***Start***.

2. Click ***Connect to***.

3. Click ***Set up a connection or network***.

4. Click ***Set up a dial-up connection***, and click ***Next***.

5. Remote configuration: Under ***Dial-up phone number***, enter the remote switching number (including city code and exchange line access number) on the PBX.

Configuration via the internal S_0 port: Under ***Dial-up phone number***, enter the internal CAPI dial-in access number on the PBX.

6. Under ***User name***, enter "admin" and under ***Password***, enter the admin PIN on the PBX.

Or: Under ***User name***, enter "external" and under ***Password***, enter the external PIN on the PBX.

Or: Under ***User name***, enter the internal telephone number of a sub-admin, and under ***Password***, enter the associated sub-admin PIN.

7. Under ***Connection name***, enter any connection name, for example, "PBX + [customer name]" and click ***Connect***.

8. Click ***Skip***.

9. Click ***Set up the connection anyway***.

Enabling the PBX for remote configuration

Requirements

✔ Internal telephone for the PBX

Steps to take

1. Pick up the receiver.

2. Enter the following series of numbers:
8 PIN * 91

Note: The PIN can be, in this case, a sub-admin PIN or the user PIN that belongs to the telephone.

You will then hear the confirmation tone (pulsating tone).

3. Hang up the receiver.

Note: You usually dial in using the remote switching number on the PBX. If the remote switching number has not been configured and the PBX has been enabled, it is accessible over each associated MSN/DDI.

Service and Maintenance

This section describes the functions available to you for detecting errors and troubleshooting. In addition, this section also describes how to update the operating software (firmware) on the PBX.

Overview of functions

Restart

A restart (reboot) is when you cause the PBX to reboot while it is already functioning.

A restart is required, for example, in the following situations:

- After the operating software on the PBX has been updated (firmware update)
- When the operating software on the PBX is changed (restore firmware)
- After the operating software on the PBX crashes
- After a change to the configuration that cannot be applied when the PBX is in operation

The following options are possible:

- Immediate restart. All the connections to the web server, all calls and all data services are closed. Unsaved data are lost.
- Delayed restart. Like an immediate restart, but performed in consideration of currently existing ISDN calls. As soon as all of the existing ISDN calls have ended (also before the expiration of the time specified), the PBX restarts. During the delay, the PBX prevents new calls from being established. If a call is still active when the timeout occurs, the call is interrupted in order to carry out the restart.
- Restricted restart: Only a part of the PBX functions is restarted. All calls are ended, and all data services are closed. The web server remains unaffected by this.

An immediate restart is automatically performed for the following functions:

- Immediate firmware update
- Firmware restoration
- Factory settings restoration

A restricted restart is automatically performed for the following functions:

- Configuration reset
- Configuration restoration
- Port configuration changes

How to perform this is described on the following pages:

- For an immediate restart at the push of a button on Page 43
- For an immediate or delayed restart at the push of a button on Page 42

Note: If possible, avoid interrupting active calls with a restart. Perform a delayed restart or wait to used a function that would cause an automatic restart until all calls have ended. The “Line” and “VoIP” LEDs indicate whether external calls are still active (see Page 41). A more detailed overview is available on the page ***Administration*** ▸ ***Monitoring*** ▸ ***External call channel assignment*** *(see also Page 42).*

Shutting down

It is a good idea to perform the PBX shutdown procedure when, for example, the PBX needs to be turned off. Do not remove the power plug for the PBX or accessories from the power socket until the shutdown procedure is complete.

During the shutdown procedure, all connections to the web server, all calls and all data services are ended and all internal processes are put into a specified idle state.

How to do this is described on Page 43.

Firmware update

A firmware update is the process of updating the operating software (firmware) on the PBX.

A firmware update is required, for example, in the following situations:

- To resolve problems
- To integrate new features

The following options are possible:

- Immediate firmware update. The PBX immediately establishes a connection to a server and downloads the most current firmware, if available. After this, an immediate restart is automatically performed. If the feature is activated, the firmware on connected system telephones is also updated.
- Regular firmware update. Like an immediate firmware update, but at previously specified time intervals.
- Manual firmware update. A firmware file that has previously been saved on the hard disk is loaded onto the PBX. After this, a restart is carried out in order to activate the new firmware.

If the new firmware proves to be defective, the firmware used previously may be restored. The PBX retains not only the current firmware used but also the firmware last used in Flash memory. When the firmware is restored, you can switch back and forth between either firmware version. During an update, the currently inactive firmware is overwritten.

How to perform this is described on the following pages:

- For an immediate firmware update, on Page 45
- For a manual firmware update, on Page 46
- To restore the firmware using the computer, on Page 46
- To restore the firmware at the push of a button, on Page 46

Note: How to set up a regular firmware update is described in the PBX Configuration Manual.

Note: How to find out the version of the current firmware is described on Page 41.

Note: Except for the applicable connection fees, a firmware update is free of charge.

Restoring the factory settings

All the settings are deleted and the factory settings are restored.

How to do this is described on Page 44.

Note: If you would like to retain some of the settings, instead reset the configuration. See Page 44.

Note: How to back up the existing configuration on a data storage medium beforehand is described on Page 44.

Resetting the configuration

Most of the settings will be deleted and reset to the factory settings. The following settings remain intact:

- Admin user name and PIN
- IP address settings
- Web server port setting
- Time
- NTP server settings
- Saved hold music and announcements
- Call data
- Provider information for Soft-LCR easy (only the data received from the update, settings are reset)

How to do this is described on Page 44.

Note: If you would like to delete all the settings without exception, instead restore the factory settings. See Page 44.

Note: How to back up the existing configuration on a data storage medium beforehand is described on Page 44.

Querying the firmware version/serial numbers

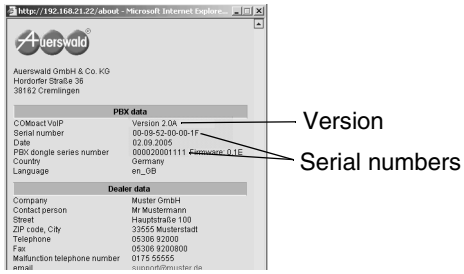
Requirements

✔ Open configuration manager (existing connection to the PBX web server)

Steps to take

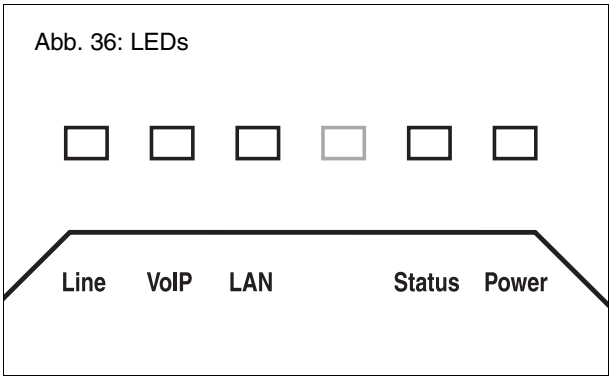
1. Click the Auerswald logo at the top left in the configuration manager.

   This opens a dialogue window. Under ***PBX data***, the firmware version as well as the name of the PBX are displayed. The PBX serial numbers and the system dongle are also displayed.



LED functions

Abb. 36: LEDs



LED “Line”	Operational/busy state of the existing fixed network lines
Orange	All call channels are being used.
Orange (blinking)	At least one call channel is being used.
Green	All call channels are ready and available.
Off	At least one call channel is not ready. (This overridden by display of the busy state.)

LED "VoIP"	Operational/busy state of the existing VoIP channels and accounts
Orange	All VoIP channels are being used.
Orange (blinking)	At least one VoIP channel is being used.
Green	All VoIP accounts and channels are ready and available.
Off	At least one VoIP account is not ready. (This overridden by display of the busy state.)

LED "LAN"	Status of the Ethernet interface
Orange	An Ethernet connection to a computer/network exists.
Orange (blinking)	An Ethernet connection exists and packets are being transmitted.
Off	No Ethernet connection to a computer/network exists.

LED "Status"	Menu prompt (after pressing the "Default" and the "Alternate" keys)
Red (blinks 50/50 ms)	Pressing the "Default" key has been detected.
Red (blinks 0.5/0.5 s)	"Default" key has been pressed long enough.
Orange (blinks 50/50 ms)	Pressing the "Alternate" key has been detected.
Orange (blinks 0.5/0.5 s)	"Alternate" key has been pressed long enough.

LED "Status"	LED "Power"	PBX status (after restart)
Red	Red	The boot partition is being tested.
Orange	Red	The kernel is being loaded from the boot partition.
Green	Red	The kernel is being initialised.
Green	Orange	The kernel modules are being loaded.
Green	Orange (blinking)	The database is being initialised/converted.
Green	Green	The PBX is ready for operation.

LED "Status"	LED "Power"	PBX status (errors)
red (blinks 1/1 s)	Red	No valid boot partition was found. System is paused.
orange (blinks 1/1 s)	Red	No consistent kernel data has been found on either boot partition. System is paused.

Note: If the "Power" LED remains constantly lit even after a restart, an error has occurred. Please contact your dealer or the manufacturer directly.

Checking the port assignment

Requirements

✔ Open configuration manager (existing connection to the PBX web server)

Steps to take

1. Click ***Administration***.
2. Click ***Monitoring***.
3. Click ***External call channel assignment*** .

   A call channel in use is indicated by a red dot; a call channel not in use is indicated by a green dot.

Restart performed immediately or delayed by computer

Requirements

✔ Open configuration manager (existing connection to the PBX web server)

Steps to take

1. Click ***Administration***.
2. Click ***Firmware update/restart***.

3. Under ***Reset of the PBX (Reboot)***, select the desired waiting time (if currently active ISDN calls should not be immediately terminated) or retain the setting ***immediately***.
4. Click ***Restart***.
5. Click ***OK***.

   The "Status" LED and the "Power" LED remain lit in green until all of the ISDN calls or at the latest until the end of the waiting time.

   The "Status" LED and the "Power" LED light up in red and orange for several seconds during the restart. See also the table on Page 41.

   If both LEDs light up in green again, the restart is complete and the PBX is ready for operation.

Note: If the "Power" LED remains continuously lit in red, an error has occurred. Please contact your dealer or the manufacturer directly.

Restart performed immediately via the keyboard

Requirements

✔ Open casing (blue protective cover)

Warning: *Improper handling of the device can result in life-threatening electrical shock.*

→ *Only authorised dealers[3] may open the casing and carry out service work using the buttons inside of the casing. If necessary, commission an authorised dealer to perform this work.*

Steps to take

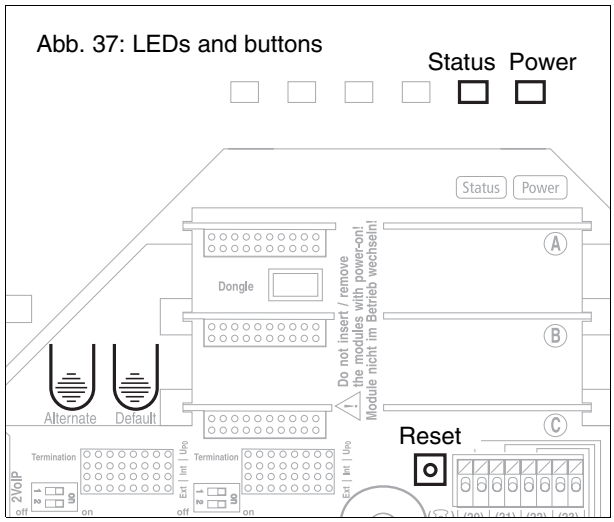
1. Press the "Reset" button. See Abb. 37.

   The "Status" LED and the "Power" LED light up in read and orange for several seconds. See also the table on Page 41.

   If both LEDs light up in green again, the restart is complete and the PBX is ready for operation.

Note: If the "Power" LED remains continuously lit in red, an error has occurred. Please contact your dealer or the manufacturer directly.

Abb. 37: LEDs and buttons



[3] These are persons that are trained for this purpose (e.g. certified electricians). They must be properly trained for working in an area with potentially hazardous voltage. Authorised dealers are made aware of the dangers they are exposed to when carrying out this type of work, and are able to reduce the risk to themselves and others as much possible.

Shutting down the PBX

Requirements

✔ Open configuration manager (existing connection to the PBX web server)

Steps to take

1. Click ***Administration***.
2. Click ***Firmware update/restart***.
3. Click ***Power down***.
4. Click ***OK***.

   The "Power" LED lights up in red and the "Status" LED lights up in green, which indicate that you may now shut down the PBX. This state remains active for 90 seconds.

Note: If you do not shut down the PBX, it restarts after 90 seconds. The "Status" LED lights up in red. If both LEDs light up in green again, the restart is complete and the PBX is ready for operation.

Backing up configuration data on a data storage medium

Requirements

✔ Open configuration manager (existing connection to the PBX web server)

Steps to take

1. Click ***Administration***.
2. Click ***Data backup***
3. Click ***Read from PBX***.
4. Follow the instructions for your browser for saving the file.

Restoring the configuration

Requirements

✔ Open configuration manager (existing connection to the PBX web server)

✔ The configuration file previously saved on a data storage medium

Steps to take

1. Click ***Administration***.
2. Click ***Data backup***.
3. Click ***Browse***, and select the configuration file.
4. Click ***OK***.
   - 👁 If you have the status bar enabled in your browser, for example, in Microsoft Internet Explorer, the progress is displayed.
   - 👁 As soon as the configuration has been saved in the PBX, you will receive a message.
   - 👁 The “Power” LED blinks in orange during a restart.
   - 👁 If the LED lights up in green again, the restart is complete and the PBX is ready for operation.

Resetting the configuration

Requirements

✔ Open configuration manager (existing connection to the PBX web server)

Steps to take

1. Click ***Administration***.
2. Click ***Data backup***.
3. Click ***Reset***.
4. Click ***OK***.
   - 👁 The “Power” LED blinks in orange during a restart.
   - 👁 If the LED lights up in green again, the restart is complete and the PBX is ready for operation.

Further steps

▷ Create a new configuration.

Restoring the factory settings

Requirements

✔ Open casing (blue protective cover)

⚠ ***Warning:*** *Improper handling of the device can result in life-threatening electrical shock.*

→ *Only authorised dealers[4] may open the casing and carry out service work using the buttons inside of the casing. If necessary, commission an authorised dealer to perform this work.*

☞ *Note: This function requires performing the steps rapidly. Make sure you are comfortable with the procedure before you begin.*

Steps to take

1. Press the “Reset” button. See Abb. 38.
2. Within the space of 2 seconds, push the “Default” button and hold it.
   - The “Status” LED starts to quickly blink in red.
   - After a few seconds, the blinking of the “Status” LED will slow down.
3. Let go of the “Default” button.
   - The “Status” LED and the “Power” LED light up in red and orange for several seconds/minutes during the restart. See also the table on Page 41.
   - If both LEDs light up in green again, the restart is complete and the PBX is ready for operation.

Note: If the “Power” LED remains continuously lit in red, an error has occurred. Please contact your dealer or the manufacturer directly.

[4] These are persons that are trained for this purpose (e.g. certified electricians). They must be properly trained for working in an area with potentially hazardous voltage. Authorised dealers are made aware of the dangers they are exposed to when carrying out this type of work, and are able to reduce the risk to themselves and others as much possible.

Further steps

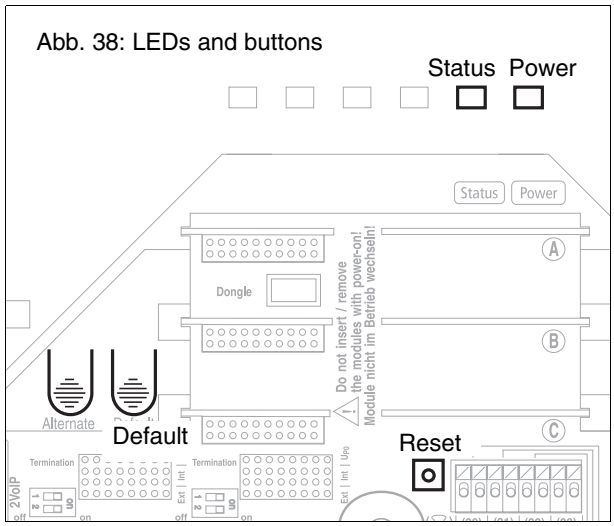
▷ Check the configuration.

Note: If the old configuration is still present, you have held the “Default“ button for too long and must therefore repeat the procedure.

▷ Create a new configuration.

***Important:** Note that the IP addresses on the PBX have also been reset to factory settings. This means you now need to reconfigure the network configuration. See Page 31. Exception: If the PBX had been configured as a DHCP client (DHCP on), this setting has been retained.*

Abb. 38: LEDs and buttons



Performing an immediate firmware update

Requirements

- ✔ Open configuration manager (existing connection to the PBX web server)
- ✔ Connection via broadband Internet access (for example, a DSL connection)
- ✔ The address of the update server registered on the page ***Administration*** ▸ ***Server configuration***: www.auerswald-update.de
- ✔ The address of the DNS server registered on the page ***Administration*** ▸ ***Server configuration***
- ✔ The number of the update server entered in the telephones, if you would like to perform a firmware update of the system telephones. See the telephone manual.

Steps to take

1. Click ***Administration***.
2. Click ***Firmware update/reboot***.

*Note: Under **Instant firmware update via update server**, enable the checkbox for the **COMfortel firmware update** if you would also like to perform a firmware update for the system telephones.*

3. Click ***Update***.
   - The “Status” LED and the “Power” LED are lit in green during data transmission.
   - The “Status” LED and the “Power” LED light up in red and orange for several seconds/minutes during the restart. See also the table on Page 41.
   - If both LEDs light up in green again, the restart is complete and the PBX is ready for operation.

Further steps

▷ To use new features after a firmware update, you normally need a new version of the operating manual and the configuration manual. Both are available per download from the support pages at the Auerswald web site (Internet address: www.auerswald.de).

Saving the firmware file in the PBX (manual firmware update)

Requirements

✔ Open configuration manager (existing connection to the PBX web server)

✔ The firmware file saved on the hard drive

Note: You can download the firmware file from the support pages at the Auerswald web site (Internet address: www.auerswald.de).

Steps to take

1. Click ***Administration***.
2. Click ***Firmware update/restart***.
3. Click ***Browse*** and select the firmware file.
4. Click ***Store in the PBX***.

If you have the status bar enabled in your browser, for example, in Microsoft Internet Explorer, the progress is displayed.

As soon as the firmware file has been saved in the PBX, you will receive a message.

Note: The new firmware is currently not yet enabled. The old firmware is retained for the moment.

Further steps

▷ Restart the PBX in order to enable the new firmware. See also Page 42.

▷ In order to use new features after a firmware update, you normally need a new version of the operating manual and the configuration manual. Both are available per download from the support pages at the Auerswald web site (Internet address: www.auerswald.de).

Restoring firmware using the computer

Requirements

✔ Open configuration manager (existing connection to the PBX web server)

Steps to take

1. Click ***Administration***.
2. Click ***Firmware update/restart***.
3. Click ***Restore firmware***.
4. Click ***OK*** .

The “Status” LED and the “Power” LED light up in red and orange for several seconds/minutes during the restart. See also the table on Page 41.

If both LEDs light up in green again, the restart is complete and the PBX is ready for operation.

Note: If the “Power” LED remains continuously lit in red, an error has occurred. Please contact your dealer or the manufacturer directly.

Restoring firmware with a button

Requirements

✔ Open casing (blue protective cover)

Warning: *Improper handling of the device can result in life-threatening electrical shock.*

→ *Only authorised dealers[5] may open the casing and carry out service work using the buttons inside of the casing. If necessary, commission an authorised dealer to perform this work.*

Note: This function requires performing the steps rapidly. Make sure you are comfortable with the procedure before you begin.

Steps to take

1. Press the “Reset” button. See Abb. 39.
2. Within the space of 2 seconds, push the “Alternate” button and hold it.

The “Status” LED starts to quickly blink in orange.

[5] These are persons that are trained for this purpose (e.g. certified electricians). They must be properly trained for working in an area with potentially hazardous voltage. Authorised dealers are made aware of the dangers they are exposed to when carrying out this type of work, and are able to reduce the risk to themselves and others as much possible.

👁 After a few seconds, the blinking of the “Status” LED will slow down.

3. Let go of the “Alternate” button.

👁 The “Status” LED and the “Power” LED light up in red and orange for several seconds/minutes during the restart. See also the table on Page 41.

👁 If both LEDs light up in green again, the restart is complete and the PBX is ready for operation.

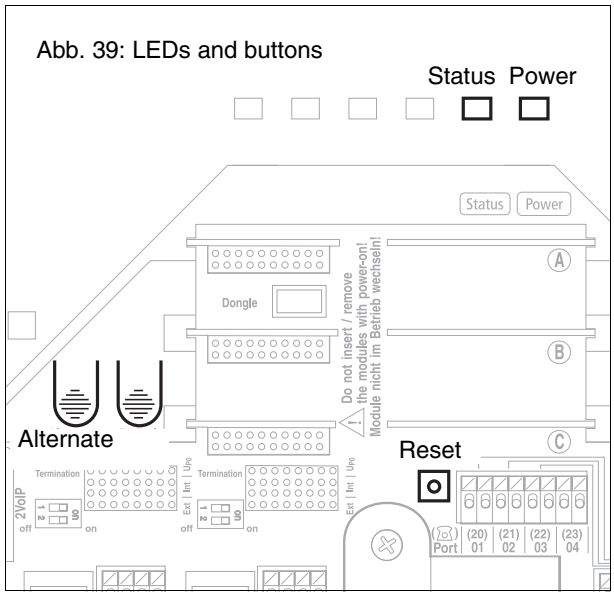
☞ *Note: If the “Power““LED remains continuously lit in red, an error has occurred. Please contact your dealer or the manufacturer directly.*

Further steps

▷ Check the firmware version.

☞ *Note: If the old configuration is still present, you have held the “Alternate” button too long and must therefore repeat the procedure.*

Abb. 39: LEDs and buttons



Starting the D-channel protocol

Requirements

✔ Computer with a connection to the PBX web server

✔ PC application, D-channel decoder, installed as of version 2.1.6

☞ *Note: The computer application can be installed from the Auerswald Mega Disk.*

✔ The IP address for the PBX is known (192.168.0.240 - factory setting).

☞ *Note: Remote recording/logging of a D-channel protocol is also possible. For this purpose, please refer to Chapter Configuring the PBX remotely via the external S_0 port (PPP external) on page 35. Instead of logging into the web interface, start the D-channel protocol. Under “**IP address**”, enter the local IP address for the PPP configuration on the PBX (**http://192.168.193.240** is the factory setting).*

☞ *Note: For external access from the Internet via a router, the D-channel decoder uses port 42225. This means that within the router configuration, port 42225 must be rerouted to the IP address of the COMpact 5010/5020 VoIP.*

☞ *Note: When entering the IP address in the “Schnittstellenauswahl” dialogue, it is possible that an existing port will need to be omitted.*

Steps to take

1. Start the computer programme.

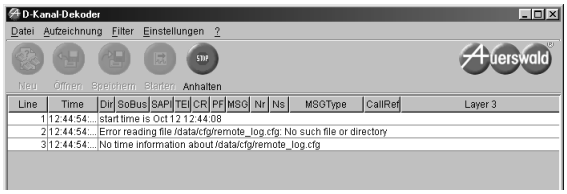
2. Click ***Start***.

3. Select the ***Schnittstelle IP***.

4. Enter the IP address for the PBX.

5. Click ***OK***.

👁 The protocol log is displayed.


D-Kanal-Dekoder
Datei Aufzeichnung Filter Einstellungen ?
Neu Öffnen Speichern Starten Anhalten
Line Time Dir SoBus SAPI TEI CR PF MSG Nr Ns MSGType CallRef Layer 3
1 12:44:54:... start time is Oct 12 12:44:08
2 12:44:54:... Error reading file /data/cfg/remote_log.cfg: No such file or directory
3 12:44:54:... No time information about /data/cfg/remote_log.cfg

☞ *Note: If you would like to end a recording, click **Anhalten**.*

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